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ARTICLE I.—*Infants. Their Food and its Digestion.* By ALEXANDER S. VON MANSFELDE, M.D., Jefferson, Illinois.

"The hand that rocks the cradle, is the hand that rocks the world.

However true this beautiful verse may be, it is outlived by another, which, though less rythmical, is so much the more undisguised by poetical license. "*The hand that nurses the infant, is the hand that digs its grave.*" And if this hand is not directed by a mother's divine love for her offspring, this occupation reaches a climax, the comprehension of which leaves the observer horror-stricken. In the city of Munich, statistics show, that of one hundred deceased infants, eighty-eight did not have the mother as a nurse. Classifying the causes of infantile mortality, we find that a certain amount of *carelessness*, however harsh this may sound, takes the initiative, and out of this the tool is wrought that does the mischief, namely, *entire ignorance of the laws that govern the welfare and the growth of the infant man.* This lack of knowledge is by no means confined to the nurse of the infant, but even

the physician of this enlightened age carries a little of it upon his shoulders, only too often the *offspring of superficiality*, not of learning, perhaps, but begotten by a routine practice.

In the latter part of July I was called to see Blanche, the three months old daughter of Mr. F., of Chicago.

The parents of the patient, quite intelligent people; father's occupation, bookkeeper; of nervo-sanguine temperament, not very strong, but of a bodily composition betokening a close knit frame—in fact, made to endure. The mother a perfect picture of health, well capable of giving birth to healthy children, but more so, qualified to nurse them.

Her confinement was natural and easy; the babe was well developed, and manifested tokens of vigorous life. The mother nursed the child herself the first few weeks after the confinement; but all at once, without failure of health, she lost the use of the breasts. The physician that assisted in her confinement, resorted to all known means to restore the action of the glands, but without avail; the child had to be fed, and as the milk of *one cow* could not be had, and the milk of the milkman was of doubtful composition, *condensed milk* was the *sine qua non* of the physician. This was duly bought by the dozen, and artificial nursing commenced. Everybody was satisfied but the baby. This, having been a good child until now, manifested its inborn badness by restlessness, crying, and all the signs of ill-temper and body. The physician was called, and prescribed for the baby. This manifesto of medical qualification was carried on to such an extent, that we found at the time of our visit, a good selection of all the mixtures that a good pharmaceutist can boast of, and above all, a baby that was taking pepsin and bismuth powders, *one every three hours*, the last prescription of the physician, and this would surely have been the last one, for the child was dying of STARVATION.

Three months old, the child weighed even less than at birth, about seven pounds; the skin hung loosely around the limbs, and had that peculiar cold and wet touch found in the wasting diseases of children. We considered it a case lost; but with a resolution, long since formed, centred in the sentence, "*where there is life, there is hope*," we told the parents we would try our best.

An error surely manifested itself here. Who committed it? What was it?

Not being able to find the cause of the non-secretion of milk, we directed our attention to the food and general nursing of the baby. *The child was not clad warmly enough for its condition.* Every practitioner knows, that in the wasting diseases, *i. e.*, in their decline, the natural heat fails very rapidly, or, better, its production is not proportionate to the wants of the organism; assistance should be procured by artificial heat. This we acted upon at once.

Next we observed (and who has not with us?) that *the child had by no means the solitude and rest that even healthy children always should have.* This is lacking in the first children of our better classes, and is a greater cause of the death of their offspring than most people are aware of. Are they the divine gifts the Creator has laid into the hands of parents for safe keeping? Does the mother try to be the guardian angel of her infant babe? In nine out of ten cases she has not even a thought of her grave charge. Used to play with dolls, until she marries, and tired of her mustached substitute for the same, kind nature loses its wisdom by presenting her with a babe, a living doll! How she enjoys to play with it! But this living doll has one great fault; it is not made of leather. It is soon worn out; the least disorder, and that soon will come, crazes the already surcharged nervous system, and the little one will soon be the victim of its mother's ignorance in this direction. We ordered a cradle for our patient, had it well prepared, and put it, with the baby, into an off-hand bedroom, the air being good in the neighborhood, and had it guarded from all noise of the house and its surroundings as far as possible.

Next, we mistrusted the food the child received—CONDENSED MILK!

Now, with all regard for the pharmaceutical and culinary so-called fancy preparations, we touch them with a certain amount of misgiving. Think of the elixirs! What are they? A nice thing for a physician who does not know how to prescribe, but surely not a good equivalent of medicine for the patient. It is the same with artificial food, and above all, *condensed milk.* We confess our ignorance of its preparation, but that the article in question was not casein 68, fat 38, sugar 30, and salts 6 parts less more or less of its 860 parts of water, we are satisfied. We knew that some of the water had gone, but with it also some of the fat, and to the market, in the shape of butyric acid combined with the

haloid, oxide of lipyl. *It was the absence of fat that caused the trouble in this case, and will cause it again and again.*

At last we eyed the prescription: pepsin and bismuth, a powder every three hours. A good prescription for indigestion, we admit; but the digestion of what? Was it to aid the food to come? The baby received the powders repeatedly upon an empty stomach. This surely was not the intention of the physician, but the mother followed his direction, a powder every three hours, and they did their work. The consequence of a superficiality, caused by routine practice. It was not ignorance, for this member of the profession is well versed in the *science* of medicine.

We saw this same child fed upon warm *cows' milk from the milkman*, lying in its comfortable cradle, warmly dressed and covered, away from the noise of the house and the street, freed from pepsins and bismuth, sleep quietly for several hours, the first time for some days, the mother affirmed, and with its sleep came the angel of health, and brought joy to the parents, life to the little sufferer, and to us a great lesson.

Afterward we resorted to a nurse (wet), and with some degree of care, the child was saved; it weighs now its ten pounds, and is in all respects well.

The natural food of the infant is milk from its mother's breast, the composition of which is, casein 35, fat 25, sugar 48, salts 2, and water 890 parts. (Simon). Upon this the babe rapidly grows, if it be furnished in good quality and quantity. But if the iron hand of fate or the cruel grasp of fashion deny this natural food, an artificial one must take its place, and the best of our craft have united on diluted cows' milk, with the addition of a little sugar, as the best substitute.

This dilution and admixture, to reduce the percentage of the nitrogenized elements, the casein, and render it more suitable for digestion and assimilation. Wells' Chem., p. 488. Now, we dare to assert that neither the first nor the last is true. Because,

1. By the addition of water no dilution of the casein takes place.

2. It is not physiological to give food, of whatever description, in a highly diluted form.

3. The digestion and assimilation of casein is not assisted by the addition of sugar.

4. It is the addition of oil that will make the artificial food a healthy substitute for the mother's milk.

As a revolution in this direction sooner or later must take place, the JOURNAL will kindly furnish us space for the maintenance of the above statements. We may be wanting in revolutionary qualification, but perhaps may be able to make some noise toward scaring things into better times for the infantile world.

There are found in the milk of woman about 35 parts of casein to a thousand; whereas, in that of the cow, no less than 68 parts are contained. (Simon). Now take 100 scruples of fresh cows' milk, about as much as a healthy child takes at a time, and mix this with 100 scruples of water, does this addition lessen the amount of casein in the fluid? It is simply a dilution of all the solid ingredients of the milk. In order to have the child get the benefit of the 100 scruples of milk, it has to be given in a bulk of 200 scruples, rather too much for one meal, and if it is given, it gets all the casein contained in the 100 scruples of milk, and if only half is given, it gets the casein of 50 scruples of milk, but existing in this milk in the ratio of $3\frac{1}{2}$ parts to a hundred, in spite of 50 or 100 scruples of water superadded. *This water separate*, as it exists *out of the body, is separated at once in the stomach, leaving the casein intact.*

As to our second assertion, we are inclined to believe little is necessary to be said. For it is not only known to physiologists that an unnatural dilution of food retards its digestion in the stomach, and as this organ in the human family is by no means created to contain fluids in quantities, these rapidly egress into the intestinal canal, where they are acted upon by the admixture of bile, pancreatic fluid and intestinal juice, to be further prepared for absorption and assimilation; but also the pathologist and practitioner know the dangers which the partaker of food incurs, when protein compounds are not acted upon sufficiently by the gastric juice to insure their absorption by the intestinal gland apparatus. One more reason, and we are satisfied a very tenable one, is the fact, sustained by physical laws, that the larger the dilution of certain bodies, the heavier the resulting precipitate will be, (think of the heavy and light magnesia carbonates); and that the texture of the coagulum is the index to the facility with which this is changed by the gastric juice into peptones. Now,

suppose that we are sustained by the above mentioned scientists, what good does the additional water do, which quickly passes into the intestinal canal? It induces a closer union of the casein molecules, which is already the case in cows' milk, making its digestion more difficult.

In order to do justice to our third assertion, we have to consider the digestion of casein and of sugar.

CASEIN, identical with the *legumin* of the seeds of certain plants, and the *crystallin* of the lens of the eye, having a chemical composition of $C_{40}\,H_{31}\,N_{10}\,O_{12}$, (Mulder), but most likely a conglomerate of different protein bodies, is the nitrogenous principle found in the milk of the mammalia. It undoubtedly takes its origin in the blood, from which it is separated by the glands of the breast; but the exact derivation must be a mystery, until albumen and casein receive their proper places through researches in physiological chemistry. As to the use of casein, no doubt can be entertained. It is the desideratum for the growth of the young animal, which not only derives the pabulum for its soft structures from it, but also the material for its bony frame, through lime salts, which are abundantly present in the casein precipitate.

Milk enters the mouth of the infant at a temperature of bodily warmth (98° Fahr). Here it is mixed with the secretions of the buccal cavity, called saliva. Has this any influence upon the digestion of casein? We say, most positively, no! It may exert a relaxing influence upon albuminoid food, like that of warm water; this is all, and surely not needed, when the highly diluted casein is eaten.

After having entered the stomach, the milk loses its identity, the casein is precipitated from the whey, which latter takes with it the sugar, some of the salts, and traces of oil. By the peristaltic motion of the stomach the coagulum is reduced to a pulpy mass, being at the same time mixed with the gastric juice; *but this division does not take place until the greater part of the whey has found its way into the duodenum.* The rapidity of division is of necessity also regulated by the texture of the precipitate, as above stated. After the solution of the coagulum, it does not present the same chemical character as that of the casein solution, milk. It is not precipitated by acids and metallic oxides, as the latter; it is no more *casein* in solution, but *casein peptone* in solution. The latter

owes its formation either to a catalytic influence of the gastric juice, *i. e.*, its pepsins; that is, it has changed itself, not losing its chemical equivalents, but a different grouping of its atoms has taken place, or it has formed a pepto-casein-salt with the earths that are largely present in casein; the former having been acted upon by the free acid always present shortly after digestion commences in the stomach. Thus prepared, the casein compound slowly enters the intestinal canal, and in this locality its absorption is further facilitated by the action of the intestinal juices upon it, whose power upon it closely resembles that of the gastric secretion.

SUGAR, $C_{12}H_{11}O_{11}$, as it is found in sugar cane; is also contained in fruits, chylariose $C_{12}H_{12}O_{12}$; in milk, as lactine $C_{12}H_{12}O_{12}$; in different species of agaric; in the mountain-ash, as sorbit $C_{12}H_{12}O_{12}$; in the substance of muscle, as pnosit $C_{12}H_{16}O_{16}$; in manna, as mannite $C_{12}H_{14}O_{12}$; in the acorn, as quercit $C_{12}H_{12}O_{10}$; in the protococcus vulgaris, as phycit $C_{14}H_{16}O_{12}$; in the eucalyptus manniferæ, this sugar has the same composition as cane sugar, but with a double grouping of its elements, $C_{24}H_{22}O_{22}$; in the liquorice root, as glycyrrhizin $C_{16}H_{12}O_{6}$. All these, and several less noticable products of the vegetable kingdom, are classed under the name of glucosides, glucose, or grape sugar $C_{12}H_{14}O_{14}$, being the standard product of the change which they undergo when introduced into the animal organism.

Sugar is not acted upon by the buccal secretions, excepting perhaps some of the more complicated glucosides, but even these can only be changed by long standing, with the saliva at a high temperature; could not, therefore, be acted upon by this medium in the short space of time allotted to their presence in the mouth, since the action of the saliva is positively interfered with by healthy gastric juice. Sugar lies actually inert in the stomach, excepting its solution and transference to the duodenal canal, from whence the fluids regurgitate, as observers have shown, to favor this transmission.

It is the intestinal tract that favors the digestion and absorption of sugar; soon after taking it, it finds its way into the intestinal canal, which it quickly traverses as far as the first half of the large intestine, from whence it is absorbed *in naturam*, or is changed in the small intestine to lactic and in the large intestine to butyric acid; either of which, combining with the alkalies, the salts of which are

found in the secretions of this locality, are also absorbed and carried into the economy to answer their purpose.

But observe, this acidity and chemical change leave a reddened condition of the intestinal membrane, an inflammatory indication, not even noticed, when chloride of sodium is substituted for sugar.

Are we justified to assert, that the addition of sugar to the diluted milk is not only of no help to the digestion and assimilation of casein, or any other protein compound, but is even of harmful tendency, when taken in any quantity above the requirements of the organism?

Who will tell the limits of its healthy or abnormal action? Who, of any practice, has not observed the ill consequences or uncomfortable condition of infants who have been fed with overdoses of sugar, or, what is worse, with candies of unhealthy composition?

Before entering upon the final subject of these lines, we take leave to diverge therefrom, being justified by the preponderance of starchy elements that make up the so-called artificial foods for infants.

WE DECLARE THAT IT IS ILL PRACTICE *to advise or silently permit the use of starch, arrowroot, tapioca, sago, wheat flour, crackers, or any combination of these, into the numberless nuisances called Liebig's food for infants, royal patent food, etc.*

It is a scientific fact that starch, in order to be of benefit to the body of the infant, must be converted into glucose. Now, Dr. Sonsino has proven that starchy food is not digested in infancy, and that there really exists a physiological despepsia for starchy aliments, caused by the inactivity of the humors that concur in the digestive process.

Now, as starch is changed into glucose by the action of the saliva, being interrupted in the stomach, and again powerfully taken up by the pancreatic fluid, which mixes with it in the intestinal canal, and completed by the intestinal juices; and as the saliva, as well as the pancreatic fluid, have little or no power over this material in the first months of infantile life, the changing influence of the intestinal secretions being infinitesimally small; and as *post mortem* examinations have repeatedly shown that this is actually the case, pathologists having found the whole intestinal

canal literally pasted up by starchy food; we cannot but wonder at the audacity with which men of learning dare to endanger the welfare and the life of the little ones intrusted to their care, by being silent upon this subject. If ignorance of mothers is a great cause of infantile mortality, why do not those who know better guide them in the right direction? *Knowledge is only of benefit when it is applied.*

Our fourth assertion, the novelty of which will be admitted, compels us for this reason, and for the sake of the importance of the subject, to be carefully minute. We hope that we will have the indulgence of the reader if we seem to repeat and state facts known to him already.

FAT is the link nature proposed between the inorganic and organic elements that constitute the animal body; it is present wherever life manifests itself, either in the growth of already existing beings, or in the propagation of the same. The radical of this hydrocarbon is called *lipyl* $C_3 H_2$, and the "*haloid base*," according to Berzelius, *oxide of lipyl* $C_3 H_2 O$. This base, combining with the fatty acids, form neutral salts, the fats, which by the addition of oxygen, assume an acid character, and separate into free acids and *glycerine*, the combination of which is $2 (C_3 H_2 O) + 4 H O$. That is, two equivalents of oxide of lipyl combine with four of water. The acids that most concern us are, margaric acid, $C_{34} H_{33} O_3 HO$; stearic acid, $C_{36} H_{35} O_3 HO$; oleic acid, $C_{36} H_{33} O_3 HO$; and butyric acid, $C_8 H_7 O_3 HO$, (or $C_8 H_8 O_4$).

The combination of these acids with oxide of lipyl form the most of the fats, and the ratio in which these salts combine is the measure of their consistency. The stearate being the most solid, the oleate being fluid, as also is the butyrin.

Mechanically considered, fat is a preserver of animal heat, and a protector of the delicate organs of the body; we only refer to the structures of the orbital cavity, which are, even in the emaciated, yet surrounded by a layer of fat; it also gives shape to the body. Lehmann expresses this very nicely; he says: "Fat is the cosmetique employed by nature to stamp the human countenance with the incomparable impress which exalts it far above all the other lower animals."

Fat is not acted upon by the saliva, nor has the gastric juice any influence upon it, except perhaps its separation from protein

bodies. The intestinal canal is nature's workshop, where fat is prepared for absorption. The bile, the first of the intestinal juices it comes in contact with, seems not to exert a great influence upon its digestion; in fact, as it is more an excrement than a secretion, one would be warranted to assert that it had no other than a mechanical influence in the digestion of fat. The pancreatic fluid seems to have the power of emulsifying the fat, and thus by minute division hastening its absorption. This process takes place from the lacteals, favored by the moisture of its delicate membranes by the bile, as it would hardly be admissible that animal tissues, kept moist by aqueous humors, would admit of such filtration. Absorption is also assisted by the small organic muscles of the interior of the villi, by a pressure at intervals exerted by their contraction. But it is also proven that the capillaries of the villi take up small quantities of fat, and carry it directly to the circulation of the portal system, which is always richer in fat after a meal of fatty food.

Chemico-physiologically considered, fat is the fuel, according to Liebig's theory, the burning of which assists largely in the maintenance of bodily temperature. The heat of the body is, under different atmospheric degrees of warmths, almost stationary, excepting perhaps the young animal, in which the normal temperature is higher than in the adult, and which (what is very remarkable) is not capable of maintaining the equilibrium of warmth, as is the adult. A small child rapidly loses its normal degree of heat when under the influence of cold.

One reason more why young children should be carefully guarded against changes of temperature.

Examining the physiological role that fat plays, we quote Lehmann, Physiological Chemistry, vol. 1, page 236:

"I was long since led from theoretical grounds to regard the fat as one of the most active agents in the metamorphosis of animal matter, and this subjective conviction has since been converted into objective proof by numerous experiments and observations. After having found by experiments, regarding the fermentation of milk, that the process cannot be excited by albuminous bodies in saccharine or amylaceous fluids, *excepting with the co-operation of fat*, I next ascertained *that a certain, although small, quantity of*

fat was indispensable to the metamorphosis and solution of nitrogenous articles of food during the process of gastric digestion."

"When we consider all the facts," continues Lehmann, on page 239, "we shall be almost involuntarily led to the conclusion that fat takes a highly important share in the most important, and at the same time the most mysterious, processes in the formation of cells and tissues. We cannot believe that fat is a mere incidental agent in all these processes; but we must rather regard it as of essential aid in the process of converting nitrogenous nutrient substances into cells and masses of fibres, in like manner as it co-operates in the processes of lactic fermentation and digestion; and it is probable that whenever a chemical equation, presenting the formation and function of certain cells, can be established, fat will constitute one of the integral factors. Indeed, it is impossible to believe, that in the vital activity of cellular action, fat should be without influence on the metamorphosis of the substances which it accompanies, and that, without reference to them, it should obey only its own affinities toward oxygen or an alkali."

In pathology we meet with fatty degeneration of the muscles, the glands, the liver and the kidneys, in either case followed by the most disastrous consequences. Here we also cite the fatty infiltration, taking place when fat is absorbed in quantities above the wants of the body, or the natural ratio is not used for the formation of bile, etc., caused by disease of the liver and other organs.

The lipomata, which favor the places where infiltration takes place, (excrescentiæ membranæ adiposæ of Margagni), are the consequences of like causes. In all carcinomatous growths, fat plays a great role, for the quicker the generation of the cancer cells, the larger the amount of fat present.

Or is perhaps the generation of these cells the consequence of an increased amount of fat, favoring the rapid development of compound nucleoli, or nuclei, into cells? How is it that cancerous growths always take their origin at the site of union of two distinctly different cell forms?

If the fat could be abstracted, would the growth of the cancer be interrupted, or altogether checked?

And just as the presence of fat favors new formation, so does its absence retard the same; we refer here to tuberculous deposits.

It is known, that in this pathological condition, it being retrogressive, the blood is poorer in fat than in any other diseased state.

Thus having traced the influences brought to bear on fat, and also its changes, and the alterations produced by the same under various circumstances, we are prepared to prove our assertion, *that it is fat which favors the digestion of albuminoid food, especially fibrine, in the food of the young.* It is a demonstrated fact that veal and lean pork are most difficult of digestion. Every housewife is aware of it, and who, in this country, has not had the experience that when these meats are prepared with a certain amount of fat, they, though yet heavy food, are well borne by the stomach, which otherwise would manifest its protest by discomfort, better felt than described?

Elsaesser has demonstrated that the milk of women is more easily digested because its fibrin-coagulate is of a more spongy character than that of cows' milk, which forms not only a denser coagulum, but the whole is of a more clotted texture.

If this physical condition is the cause, what then in the two milks is it that makes this difference? and is there anything in science that will alleviate the obstacle which prevents cows' milk being a good substitute for mother's milk?

Is it a lessened per centage of water in cows' milk that gives rise to the difference? The difference in thousand parts is from 10 to 20 only; why then advocate the addition of 990 parts of water? We cannot see the scientific deduction that lies in this admixture.

Is it the addition of sugar to cows' milk, that makes this similar to the natural food of infants? We have seen that this carbohydrogen compound has no influence at all upon the digestion of the protein bodies, nor is it acted upon by the secretions of the alimentary canal forcibly enough to warrant the conjecture, that by decomposition it may exert some influence upon stomach digestion.

It is the difference of fat contained in the respective milks. The milk of the cow holds 10.5 parts less fat than that of the human female, when compared with the casein found in them.

We instituted the following experiments:

1. We took 7½ drachms of fresh cows' milk, and added a half drachm of white vinegar, shaking the fluid before and after the mixture.

2. We mixed 7½ drachms of the same milk with twenty drops of sweet almond oil; then we added a half drachm of the same vinegar, shaking the compound well.

3. We added to three and three-fourth drachms of the same milk as much water, mixing it well with the former; then we added a half drachm of the same vinegar again, shaking it well.

The fluids were contained in two oz. prescription vials, white glass, at a temperature of 65°. We noted the following consequences:

In No. 1 the casein slowly separated from the whey, *and settled upon the bottom of the vial*, the precipitation being not quite complete.

In No. 3 we observed small granules of precipitated casein, smaller and compacter than those in No. 1, but the fluid retained its milky appearance.

In No. 2 the casein precipitated completely, *i. e.*, as far as we could observe from the physical appearance of the vial contents, but the *coagulum was decidedly more flocky, and, what is very remarkable, it floated upon the clear whey.*

To be sure that no unforseen interference caused this difference, we repeated the experiment with Nos. 1 and 2; taking, this time, three ounces of fresh milk, and one ounce of the same vinegar, adding to No. 2 one drachm of sweet oil of almonds, with positively the same consequences. The only difference, perhaps, being a more distinct separation of the casein in No. 1, owing to the increased amount of vinegar added. In No. 1 the whey was above the precipitate, and in No. 2 it was below the coagulum.

In both experiments there was a separation of two distinct precipitates, one floating upon the whey, and the other settling on the bottom of the vial, this phenomenon being observed only in the mixture that contained the oil, and so fixed is this separation, that after repeated shaking the same division would take place.

The result of these experiments, though expected, demonstrated to us the fact that the looser coagulum of woman's milk is formed by the greater amount of fat in it (compared with the per centage of casein), and that this physical condition can be artificially produced by the addition of one scruple of oil of sweet almonds or cod-liver oil to every two ounces of cows' milk. It is proven that the presence of fat is necessary for the digestion of protein bodies;

it is known that a larger amount will facilitate this process (of course not in a quantity above normal requirements.) We took a half drachm of pepsin, added to it one and one-half ounces of water and acidulated the mixture with twenty drops of muriatic acid; after some time we added of the clear fluid, avoiding the white precipitate on the bottom of the bottle, one-half ounce to each vial of our first series of experiments, and find, twenty-four hours after the admixture, in a temperature of sixty-eight degrees, half of the precipitate in No. 2 redissolved, whereas it is hardly attacked in No. 3 and but little in No. 1, proving that even out of the body the above statement is true.

Elsaesser has demonstrated the fact that the easier digestion of the fibrine in woman's milk is caused by the gelatinous, light texture of its coagulum; and

We think we have ascertained *that it is the larger amount of fat mixed with the fibrine in woman's milk, that causes the spongy consistence of the coagulate, and*

WE JUSTLY CLAIM, THAT THE ADMIXTURE OF FAT WITH COWS' MILK WILL MAKE THIS THE BEST ARTIFICIAL FOOD FOR INFANTS.

Should our deductions not meet with the entire approval of the profession at large, of which we have no sanguine expectation, we nevertheless earnestly hope that this article will help to shake the positively untrue opinion, that cows' milk will be a good substitute for mothers' milk when diluted with water and with the addition of sugar.

We think experience has amply proven how watery this water-doctrine is, and we exclaim, with the great Lehmann,

"Spring must yet come."

Will the friends of progress be kind enough and give this formula of ours a fair trial, by instructing the nurses and mothers of infants, not only as to the manner of its use, but explain to them also its mode of action, capacitating them, as much as possible, to nurse their children understandingly; for then, and only then, will

"The hand that rocks the cradle, be the hand that rocks the world."

ARTICLE II.—*Postural Treatment for Extensive Distension of the Intestines with Gas.* By CHAS. T. PARKES, M.D., Chicago.

I am led to record the following cases more for the purpose of having the treatment therein adopted subjected to extensive trial, than from any supposition that they present any unusual phases, or that they are sufficient to establish the infallibility of such treatment. During the winter of 1871 I unfortunately had quite a number of cases of labor, complicated with puerperal metritis and metro-peritonitis. Among the most distressing and uncomfortable conditions incident to these puerperal affections, is that of extensive distension of the intestines with gas—in a word, tympanitis. In the attempt to relieve this troublesome complication, I subjected my patients to a fair trial of the medicines ordinarily supposed to be of avail in such conditions, but cannot say that much, if any, relief rewarded the trial.

I resorted also to the introduction of the largest sized bougies into the large intestines, and in one case obtained some slight escape of the retained gas, but was not favorably impressed with its use, neither was the patient. My attention was called to what I have termed the "postural treatment," in this way: While in the dissecting room, I had noticed for some time back that bodies in which the intestines were filled with gas, were always relieved of it by placing them face downwards, flexing the thighs on the body, and allowing the weight of the body to fall upon the distended abdomen, the gas invariably escaping per anum, provided the lower bowel was in part or entirely empty.

Might not the result be similar in the living body? I had an opportunity to make the application soon, in the following cases:

Mrs. P——, in labor with her tenth child—shoulder presentation—delivered by turning—placenta did not come away as usual, found it adherent, and removed it by manual interference. On the 5th day after delivery, Mrs. P—— presented all the symptoms of well-marked metro-peritonitis. In a few days the abdomen was swollen out to its fullest capacity by gaseous accumulations, the patient suffering unutterable distress—painful dyspnœa—troublesome hiccough.

The following treatment was adopted, and with immediate relief:

A large enema was given, and the lower bowel fully emptied; then the patient was turned with her face downwards, the weight of the body falling on the distended abdomen, the thighs flexed upon the abdomen, and the patient directed to make straining efforts. These efforts were soon followed by the escape of an enormous amount of gas. The relief was so great as well as grateful to the patient, that she could not be induced to resume the dorsal decubitus until the abdomen had reached almost its normal level. She resorted to the same plan for relief whenever the distension became uncomfortable, and was always satisfactorily rewarded. The case terminated favorably.

Mrs. McL——. Second pregnancy—labor normal. On the 7th day after confinement, metro-peritonitis was fully developed, accompanied with great distension of the abdomen. Tried the usual methods adopted to get rid of the accumulation of gas, and failed; resorted to the "postural treatment," as in first case, and it was followed by complete and rapid subsidence of the distension, and entire relief to the accompanying annoying distress. The patient made a good recovery.

Mrs. M——. Sixth pregnancy; separation of the placenta during last weeks of pregnancy with excessive hemorrhage; membranes ruptured and delivery hastened; gave birth shortly to a healthy but bloodless child; mother greatly exsanguinated. On the fifth day, well-marked metro-peritonitis manifested itself, followed by swollen abdomen. The "postural treatment" resorted to for the relief of the latter condition, with a complete and satisfactory result. The patient passed quietly along into her usual good health.

Remarks. The cases speak for themselves. The number is not great, but the fact, that even three successive cases were so immediately and successfully relieved of such a disagreeable complication by the adoption of this method of treatment, argues quite strongly in favor of a more general trial. Even if only occasional cases can be benefited in this manner, such harmless treatment should be widely known. Of course intestinal distension by gas in any disease can be easily managed, if the "postural treatment" suggested proves equally as prompt and effectual in its relief when tried by others, as it has been for me in the cases above mentioned.

ARTICLE III.—*Labor, Puerperal Fever, and Death.* By GEO. J. MONROE, M.D., Leland, Ill.

Mrs. Catharine Apt; German; aged 20; primapara; taken in labor December 22d, 1873. Mrs. Apt was very fleshy; adipose tissue abundant. When pregnant about two months she met with a fall, fracturing the leg in the lower third. After recovering from this injury she was pretty well for the balance of the time of her pregnancy, with the exception of persistent constipation, frequently going five or six days without an evacuation of the bowels; still, no great inconvenience resulted therefrom.

At about six o'clock P. M., December 22d, while at the supper table, the membranes ruptured without any premonitory symptoms, allowing the liquor amnii to escape. After the escape of the waters a severe hemorrhage commenced. Her husband got her to bed as soon as he could, called in a neighboring woman, and sent for me as speedily as possible.

I got there about half past eight, having seven miles to go. She was still flowing profusely; the blood had saturated two quilts, two woolen skirts, one woolen shirt, and a piece of rag carpet; still, she did not seem to be much prostrated. I at once gave her two teaspoonfuls of Tilden's fluid extract of ergota; made a digital examination; found the womb soft and flabby; os dilated so I could introduce two fingers; head presentation. As yet she had had no pains. In about fifteen minutes after administering the ergota the hemorrhage ceased, and did not again appear to any amount until after the expulsion of the child. She had no pain during the night or next day until about six P. M., at which time labor pains commenced, and went on naturally until about three A. M. of the 24th, when she was delivered of a puny, feeble girl. The cord was twenty-two inches long, and about the size of fence wire. I have never seen so small a cord during my practice of thirteen years. After the child was born, and on making slight traction on the cord, it at once separated from the placenta—something that never happened with me before. I waited one hour for the expulsion of the after-birth, but it did not come; neither was there the slightest indication of pain. Gave two teaspoonfuls of ergota fluid extract. Waited one half hour—still no pain. Intro-

duced my hand to deliver placenta; on reaching the os, I found it so much contracted that it required some effort to introduce the index finger. Made forcible dilatation, and reached the placenta, which was high up in the uterus; had to use my fingers to detach a portion of it from the womb; finally succeeded in delivering it.

After the removal of the placenta there was but little flowing; the womb seemed to contract naturally. After remaining about one hour, everything being apparently right, and the lady very comfortable, I left.

She remained comfortable until about six P. M., Wednesday evening, when all at once she was taken with severe uterine pains; several large coagula of blood were expelled.

I was sent for. On my arrival at 9 P. M. I found her suffering as much as she had at any time during her labor. On examination found no coagula in the womb; uterus very hot to the feel, and unusually dry. Gave opii in full doses to control the pain, and ordered castor oil to move the bowels.

Was sent for early Thursday morning. Pain still continued; no movement of the bowels; pulse 140; profuse perspiration. Puerperal fever, well marked. Gave morph. sulphas, gr. j, every three hours; ordered calomel, gr. xv, to be followed in three hours by castor oil, oz. ss., spirits turpentine, gtts. xxx; this to be followed in ten hours, if no operation, by injections of warm water.

Eight P. M. Thursday: abdomen tympanitic; bowels had moved two or three times; pain less severe; no sleep; pulse 140. Continue morphine, with quinine, gr. ij, with each powder. Turpentine over bowels. Egg-nog and beef tea.

Friday morning I found that she had vomited a great deal during the night. Pain severe; lochia had ceased; bowels had moved twice; great tympanitis; considerable flatulence; urinates freely; some hiccough; pulse 130. Ordered gr. j sulph. morph. every hour until rest was obtained. Nourishment and stimulants if the stomach will retain them.

Friday evening: had rested a good deal during the day; pulse 145; had taken some nourishment. Continue morphine sufficiently often to control pain; quinine, nourishment and stimulants; warm application over abdomen.

Saturday morning: had slept some during the night; bowels had moved twice; pulse 140, very feeble; hiccough produced by

any movement; wanted beer. Continue treatment; give beer in limited quantities.

Sunday morning: stomach rejects everything taken; hiccough almost continually; eyes very much injected; some difficulty in vision—in trying to reach a raveling on the bed, fell short about an inch with each effort. Death imminent. Use morphine and quinine dissolved in beef tea, by injections per rectum. Purulent and very offensive discharges from vagina. Ordered injections of warm water and carbolic acid per vaginam.

Monday morning: eyes more injected; rested some during the night; had taken a good deal of beer; pulse rapid and very feeble; respiration labored; tympanitis great; feet cold and clammy; anxious expression; contracted features; mind clear; abdomen purple. Continue injections.

On my arrival Tuesday morning at 10 A. M. she had just breathed her last. Did not rest any during the night; suffered a great deal of pain; vomiting and hiccough all night. Retained her senses until the last moment.

The questions that arise in my mind, are the following: What was the cause of the hemorrhage before labor? had the fall in the early stages of pregnancy anything to do with it? Why was the cord so unusually small? why did it separate so easily from the placenta? Might not the remaining quiet during the treatment of the fractured leg have produced the persistent constipation? Is puerperal fever any more apt to occur where we have hemorrhage than when we do not?

I attended four other ladies during the same week; no unusual symptoms present in either of the cases; convalescence natural in all.

ARTICLE IV.—*A Case of Dislocation of the Ulna backward, without Displacement of the Radius.* Reported by NORMAN BRIDGE, M.D., Chicago.

J. S., a German of medium height and slight build, and twenty-five years old, was thrown from his wagon July 27th, 1873, and received an injury of his left elbow.

He was seen by the writer within twenty minutes after the accident. There was an apparent projection backward, of the olecra-

non; the arm was held at right angles; the hand was in the supine position, and bent laterally toward the ulnar side, as in the position assumed on dressing with the pistol splint. There was no abrasion externally, or apparent contusion.

On examination, the ulna was found dislocated backward, the radius not being displaced. No other abnormality could be made out.

Under the influence of ether the dislocation was reduced, very little force being required to replace the bones, and a distinct sound being produced as the joint surfaces struck together. A light dressing was applied for protection, and the arm placed in a sling.

There was for a few days considerable swelling and heat, for which water dressings were applied. In a week the man began to use the arm, and in a month very little effect of the injury remained. The contour of the joint was perfect on recovery.

In view of the exceeding infrequency of this accident, and the difficulty of its production without fracture of the coronoid process of the ulna, it may be questioned whether in this case such a complication did not exist.

I am only sure there was no crepitation on manipulating the elbow after the displacement was reduced; nor was there any other indication that to me positively suggested a fracture.

That there was extensive rupture of the ligaments, if no fracture existed, may be presumed from the ease with which reduction was accomplished. At the time the case was examined no considerable swelling had taken place, and the position of the head of the radius, the condylis of the humerus and the olecranon, were distinctly demonstrated.

Progress in Medical Sciences.

ARTICLE I.—*Report on Gynæcology.* By A. REEVES JACKSON, M.D., Lecturer on Gynæcology, Rush Medical College.

1. Anticipation of Post-Partum Hemorrhage. DR. EWING WHITTLE. (*British Medical Journal*, Sept. 27, 1873. *American Journal of the Med. Sci.*, January, 1874.)

2. On the Systematic Examination of the Abdomen, with a view to Rectifying Malpositions of the Fœtus during Labor. By ARTHUR EDIS, M.D. (*Med. Times and Gazette*, Jan. 11. *Half-Yearly Abs. of the Medical Sciences*, July, 1873.)

3. Fetal Physical Diagnosis. DR. HUNTER. (*The American Practitioner*, Dec., 1873. *Obstetrical Journal of Great Britain and Ireland, American Supplement*, Dec., 1873.)

4. Hydrate of Chloral in Puerperal Convulsions. By ALEXANDER MILNE, M.D. (*Transactions of the Edinburgh Obstetrical Society*, 1872.)

5. Hydrate of Chloral and Bleeding in Puerperal Convulsions. By P. J. ROEBUCK, M.D. (*American Journal of the Medical Sciences*, Jan., 1874.)

6. New Operation for Contraction of the Vaginal Orifice of the Neck of the Uterus. By DR. V. SABOYA. (*Revista Medico Rio de Janeiro*, Aug. 10, 1873. *American Journal of Medical Sciences*, January, 1874.)

7. Clinical Lectures on Diseases of Females. By T. GALLARD. Paris, 1873.

1. Dr. Whittle states that post-partum hemorrhage may be diagnosed in advance, and being diagnosed, may be prevented. He says that hemorrhage may be expected when the pains during parturition are "strong and quick; they do not gradually culminate into a strong pain and subside again, but they are sharp, quick, and cease almost suddenly; and the intervals between the pains are long in proportion to the length of the pains." In normal labor, for one or two hours before its completion, the length of the pains is about one-third of that of the interval; that is, if the pains last from fifty to sixty seconds each, the intervals will average about three minutes, or a little less. Now, according to Dr. Whittle, if the pains have the sharp, quick character described, and last only from forty to fifty seconds, with intervals of five or six minutes, hemorrhage will be sure to occur after the delivery is completed,

even though the labor may proceed steadily, and the head advance with every pain. The explanation is this: the uterus contracts sharply, and then becomes fully relaxed; after the delivery, a relaxation follows; one or two sharp pains expel the placenta with a gush of blood, and the uterus is again relaxed, the same tendency continuing which existed before the birth of the child.

The means used and recommended by Dr. W. for the prevention of the flooding, consist in altering the character of the pains—making them longer and the intervals shorter, thus causing them to approximate those of natural labor. This is effected by the use of ergot. Dr. W. gives, so soon as the os is dilated, a full dose of the drug, and if this does not produce the desired effect at the end of an hour, he repeats it. "In dealing with primiparæ, caution is required, first, not to administer ergot until the soft parts are pretty well dilated, as well as the os uteri; and the drug should be administered in much smaller doses, as it sometimes acts with unusual energy in primiparæ. Generally, in about twenty minutes or half an hour after the ergot has been administered, the pains increase in length and frequency, and when the labor is over, the uterus maintains a good contraction."

2. Dr. Edis advocates the systematic examination of the abdomen either prior to, or during the early stage of labor, with a view to rectifying malpositions of the fœtus by external manipulation. Dr. Edis expressed the belief that the universal adoption of this expedient would tend materially to diminish the large mortality which occurs from accidents of childbirth. The process of external version was described as very simple. With the patient on her back, and the knees drawn up, a little experience will soon enable the practitioner to detect the position of the fœtus; and by turning the patient on her side, and making pressure and counter-pressure on the head and breech, the correction of any abnormal position may be readily accomplished. Every physician should consider it his duty to examine carefully the position of the fœtus in utero on first visiting his patient in labor. The diagnosis of the fœtal position can be made out before the membranes are ruptured, and version can be performed even before labor begins. Version by this method can be made during labor with much less danger to the mother and the child than is possible by any other mode.

Dr. Barnes states that a head presentation is the type of a natural labor, and it follows that to obtain a head presentation is the great end to be accomplished by art. By external manipulation, cephalic version can be performed as readily as either podalic or pelvic version. The advantages of this method can be at once appreciated where interference at a very early stage of labor may be desirable, as in cases of placenta prævia, accidental hemorrhage, and convulsions.

3. Dr. Hunter gives the history of three cases in which cephalic version was performed by external manipulation before the rupture of the membranes. In two of these cases the malposition was shoulder presentation.

Dr. Hunter concludes that in cases where the malposition is rectified prior to labor, "it is necessary to re-examine the case at intervals to see that the fœtus does not resume its old position, this being the more imperative during the first part of labor. I believe firmly that were every case examined prior to the rupture of the membranes, the abnormal presentation recognized, and the proper measures instituted, there would be no necessity for the record of an unnatural labor."

4. Dr. Milne reports a case of a woman in labor with her fourth child, who, as the labor was progressing normally towards conclusion, was frightened by the noise of a falling body, and went into a convulsion. The child was born, but the fits still continued at short intervals. Sixty grains of hydrate of chloral were given, and in about fifty minutes the eclampsia ceased, and the patient fell into a heavy sleep which lasted eight hours. She awakened confused, but free from headache or sickness, and made a good recovery.

5. Dr. Roebuck's case is one of a woman twenty-two years of age, who was advanced eight and a half months in her first pregnancy, and who, without any premonitory symptoms, was attacked with violent convulsions. Sixteen ounces of blood were taken after the third fit, and a half grain of sulphate of morphia administered; vomiting soon followed; pulse eighty per minute. The bleeding was repeated in three hours, and another half grain of morphia given. Vomiting again followed, and there was slight

abatement of the spasms; pulse eighty. At the end of five hours after the onset of the attack, the patient was entirely unconscious, the convulsions returning every twenty or thirty minutes, and lasting from ten to fifteen minutes. Pulse still eighty, and the pupils fixed.

Although the vagina was well lubricated and flaccid, there was no dilatation of the os uteri, no evidence of uterine contractions, and the patient was not considered in labor.

An attempt was made to give thirty grains of hydrate of chloral, but the dysphagia was so great that only a fractional part of the dose could be given. Seventy grains were then given by the rectum, effectually arresting the convulsions, and producing unconsciousness. The pulse rose to 120 in one hour, when labor pains commenced. A living child was born fourteen hours afterwards. Consciousness did not return until ten hours later, when she for the first time realized that she was a mother.

6. Dr. Saboya states that having found by experience that incisions of the neck of the womb, whether made with the bistoury, the scissors, or the hysterotome, even when followed by the sponge tent, had a tendency to subsequent contraction, he was induced to modify the operation as follows:

A tubular needle armed with a metallic thread, was passed into the cervix uteri one-fifth of an inch from its orifice, and made to emerge at an equal distance on the other side. The wire being then pushed through the needle, its extremity was seized with nippers and held while the needle was withdrawn. A loop was then formed on each extremity of the wire at a distance of about two inches from the cervix. The nippers were then passed into the cervical canal, the middle of the wire seized and drawn down and cut in two. Each of the cut ends of the wire was then passed through the loop of the corresponding side, and slightly twisted. The wires were allowed to remain one month, being twisted a little every eight days. At the end of that time the wires had produced fistulous tracts, the sides of which had no disposition to unite; they were now removed, and the remaining tissues were cut at the same time with a long narrow bistoury guided by a director.

The operation thus described was performed upon two patients, with complete success. A sufficiently patulous os uteri was secured

by an almost bloodless operation, and the extremities of the incisions being covered by mucous membrane, had no tendency to become adherent or to contract.

7. Dr. Gallard says, "that while Marion Sims advises washing the hands *before* making an examination, it is thought best in Paris to wash them *afterwards*." Both are right. The hands should be washed both before and after.

ARTICLE II.—*Progress of Surgery.* By JNO. E. OWENS, M.D., Lecturer on Surgery, Rush Medical College, Chicago.

1. *The Treatment of Joint Affections by Massage.* Arranged by W. R. FISHER, M.D., after oral translations from the Danish by GEO. R. CUTTER, M.D. (*Medical Record*, New York, Jan. 1, 1874.)

2. *A Successful Case of Abdominal Section for Intussusception.* With remarks on this and other methods of treatment. By JONATHAN HUTCHINSON, F.R.C.S. (*The Medical Press and Circular*, London, Nov. 26, 1873.)

3. *Remarks on Certain Recent Papers on the Action of Alcohol.** By DR. ANSTIE. (*The Practitioner*, London, December, 1873.)

1. We make the following extract from Dr. Fisher's paper:

The word massage (Gr. μάσσω: to knead) has been adopted by the Danish writers from the French, and signifies the use of such passive manipulations as rubbing, kneading, percussing, and rolling of the soft parts. Some of the authors extend its meaning so as to include passive movements of the joints; while others restrict it to manipulations which can be given with the fingers, and use the term effleurage to designate hand-rubbing. The reader may understand the word massage, whenever it occurs in this paper, to mean passive manipulations with the fingers or hand; when movements of the joints are spoken of, the term passive movement will be employed. The attention of the profession in Denmark has been especially directed towards the subject of massage by the widespreading reputation of Dr. Mezger, a Dutch physician now

* This paper is arranged under the heading Progress of Surgery, in consequence of the bearing which such experiments have upon the treatment of pyæmia, septicæmia and erysipelas.—O.

practicing at Bonn, who has recently achieved an increased celebrity by a successful employment of this means in the treatment of the Danish Crown-Prince. The papers (of which Dr. Fisher's article is a translation) all relate to Mezger's method, as it is called; and since the reputation of this physician is deeply dependent upon his success in the treatment of joint affections, although he extends his method to a variety of other complaints, this abstract is confined to the consideration of that class of diseases. It should be borne in mind that the American method of treating joint inflammations by extension and counter-extension, without preventing locomotion, is rarely used anywhere in Europe, and in Denmark and the Scandinavian countries has probably scarcely been heard of; so that the objections which are hereafter, in the course of this paper, to be made against "the usual methods of treatment," should be understood to refer, for the most part, to the use of counter-irritants and the plaster of Paris bandage.

Dr. Mezger employs massage in treating both acute and chronic synovitis in the articulations of the extremities. In the case of the hip-joint, however, he does not use it; partly on account of the deep situation and anatomical relations of this articulation, and partly from the fact that its inflammation often depends upon primary osteitis. He divides his frictions into two classes: the first, passing from side to side, (horizontal); the second, passing from below upwards in the line of the limb, (vertical friction). The applications vary in force according to the effect which he desires to produce, and are made, not only upon the joint itself, but also upon the adjacent unaffected tissues. By means of the horizontal frictions the skin is moved about over the fasciæ and ligaments, and the superficial vessels are acted upon, partly by the direct application of mechanical force, and partly by the indirect influence of the vaso-motor nerves. The circulation of the blood is thereby increased; and where there is a tendency to venous stagnation, the bluish color is removed, and the skin assumes its natural appearance. The vertical frictions are made in the direction of the circulation of fluid in the venous and lymphatic vessels, and promote the flow within them. By a combination of these two methods of manipulation—the one stimulating the action, and the other propelling the contents of the blood vessels and lymphatics—absorption is necessarily increased. Still farther, where there are

deposits or effusions of blood in the soft parts, the use of frictions may bring about slight changes in these portions, and tend to disperse them, by breaking them up and rendering them more readily absorbable. Massage, therefore, is a powerful agent in producing the absorption of effused materials; acting both by preparing them for removal, and also by promoting the proper functions of the lymphatic vessels. Compression will likewise promote absorption, by the lymphate, but it acts upon the subcutaneous veins, and gives rise to œdema of the parts below the points of application; whereas by the use of massage, not only is there no obstruction offered to the venous flow, but, on the contrary, the circulation is greatly promoted. For these reasons massage can be used with great confidence in the treatment of synovitis. In acute and chronic synovitis, the vertical frictions are more applicable than the horizontal. According to Mezger, the average time which is required for the treatment of an acute synovitis by this method is two weeks, and for a chronic case six weeks. The hyperplastic forms of synovitis require a somewhat more complicated treatment. (All cases which have advanced to suppuration are excluded.) Both the horizontal and vertical frictions are to be employed, and usually strong pressure is required, especially over those points where the peri-synovial tissue is felt to be much thickened. The more acute the inflammatory process the softer should be the pressure, as a general rule. Synovitis-hyperplastica presents a hyperplasia of the anolar tissue in the synovial membrane and the peri-synovial tissues, together with a more or less plentiful serous exudation. At the same time there is a development of newly formed vessels. Usually a more protracted course of treatment becomes necessary. Dr. Mezger recommends to his patients, both in acute and chronic cases, a moderate use of the affected joint, to an extent which is limited by the production of pain; passive movements are also used by him at the same time. Dr. Mezger's chief merit consists in the fact that he has separated massage from the system of therapeutic gymnastics of which it forms a part, and that he has studied its effects upon diseases more thoroughly and completely than has ever been or could have been done while it remained in the position of accessory to other treatment. Mezger has elevated massage to the dignity of chief therapeutic means in

his treatment of joint affections, and passive movements assume with him a secondary importance.

At a meeting of the Medical Society of Copenhagen, September, 1872, Dr. P. Winge made some practical remarks upon Mezger's method. He describes it briefly as consisting essentially in kneading, rolling, percussing, and rubbing the parts which are the subject of treatment. The operator sits in front of his patient on a low stool, and begins by oiling the part with perfumed lard. He rubs strongly whenever indurations, infiltrations or effusions are to be dealt with, and follows from below upwards the course of the lymphatic vessels in the extremities. When the knee-joint is the subject of treatment, he works across the joint with the fingers of one hand, on both sides, below the patella, pressing inwards with more or less force; while the fingers of the other hand work in the same manner upwards along both sides of the patella, over the capsular ligament, or any ligament which is felt to be swollen. This process is continued from three to five minutes. He then grasps the joint with the right hand, pressing firmly, rubs upwards over the patella, as high as the superior insertion of the investing ligaments. The applications are repeated once or twice every day.

2. The patient was a child aged two years. The intussusception had commenced at the cæcum, and was of such length that its extremity, presenting the inverted ilio-cæcal valve, was extruded several inches at the child's anus. The condition had been one month in the course of development; latterly the case had been treated as one of prolapsus, and attempts had been made to keep the bowel in place by means of a cork pad. The child was very ill, and the author having failed in attempts to effect reduction by enemata, etc., and having had experience of several similar cases which had ended fatally, determined to operate. The child was put under chloroform, and the abdomen was opened in the middle line below the umbilicus. The intussusception was then easily found, and as easily reduced. The after treatment consisted only in the administration of a few mild opiates, and the child made a rapid recovery. The author next narrated briefly the particulars of those somewhat similar cases in which he had been consulted, and in which the intussuscepted bowel could be easily felt by the finger in the rectum. In all these, in spite of persevering treat-

ment by injections, bougies, etc., the patients had died unrelieved. From a consideration of cases, the following conclusions were suggested:

1. That it is by no means very uncommon for intussusception to begin at the ilio-cæcal valve, and to progress to such a length that the invaginated part is within reach from the anal orifice, or even extruded.

2. That it is of great importance in all suspected intussusception to examine carefully by the anus.

3. That in almost all cases of intussusception in children, and probably in most of those in adults, the diagnosis may be made certain by handling the invaginated part through the abdominal wall.

4. That in a large proportion of the cases in which children under one year are the patients, death must be expected in from one to four or six days from the commencement.

5. That in fatal cases death is usually caused by shock, or by collapse from irritation, and not by peritonitis.

6. That in many cases it is easy, by estimating the severity of the symptoms (vomiting, constipation, etc.), to form an opinion as to whether the intestine is strangulated, or simply irreducible.

7. That in cases of strangulated intussusception, whilst there is great risk of speedy death, there is also some hope that gangrene may be produced, and spontaneous cure result.

8. That in cases in which the intussuscepted part is incarcerated and not strangulated, there is very little hope of the occurrence of gangrene, and it is probable that the patient will, after some weeks or months, die, worn out by irritation and pain.

9. That the chances of successful treatment, whether by the use of bougies, or by the injection of air or water, are exceedingly small, excepting in quite recent cases, and that if the surgeon does not succeed by them promptly, it is not likely that he will succeed at all.

10. That the cases best suited for operation are those which have persisted for some considerable time, and in which the intestine is only incarcerated; and that these cases are also precisely those least likely to be relieved by any other method.

11. That in cases just referred to, after failing by injections, bougies, etc., an operation is to be strongly recommended.

12. That the records of post mortems justify the belief that in a considerable number of the cases referred to, the surgeon will encounter no material difficulty after opening the abdomen.

13. That the circumstances which might cause difficulty, are—(1) the tightness of the impaction of the parts; (2) the existence of adhesions; and (3) the presence of gangrene.

14. That in selecting cases suitable for operation, the surgeon should be guided by the severity of the symptoms to an estimate of the tightness of the strangulation, and as to the probability of gangrene having already set in.

15. That in cases in which the patient's symptoms are very severe, or the stage greatly advanced, it may be wiser to decline the operation, and trust to the use of opiates.

16. That the operation is best performed by an incision in the median line below the umbilicus.

17. That in cases of intussusception in young infants, under one year of age, the diagnosis is very desperate.

18. That the last fact mentioned may be held to justify, in the case of young infants, very early resort to the operation.

3. The influence of alcohol in reducing temperature is a fact so contrary to preconceived ideas, that until within the last few years it was never even suspected. The attention of Professor Binz was drawn to the subject while he was still unaware of the researches of Ringer and Rickards; and at his instigation M. Curry Bouvier made a series of experiments, in the laboratory at Bonn, with very decided results. On healthy men and on animals, alcohol in moderate doses produced a small, and in large doses a considerable, reduction of heat. Moreover, a dog which had been thrown into a pyrexial state by the injection of pus into the subcutaneous tissue, had its abnormal temperature markedly reduced by considerable doses (each about one drachm absolute alcohol with water); the lowering amounted to more than two degrees in all. The alcohol was then discontinued, the temperature rapidly rose again, and went on rising till death. At a recent meeting of the British Association, Professor Binz, though necessarily in somewhat popular style, laid down, as the definite result of recent experiments, that alcohol always reduces temperature, but that the effect was most readily perceptible in feverish persons, in whom bodily heat was much above the normal line.

I cannot help remarking here (says the author of this paper), on the singular and even grotesque course which English popular medical opinion has taken on this question of alcohol in pyrexia, since the death of Todd. His observations, which were doubtless inexact (for medical thermometry did not in his time exist), have been declaimed against in every variety of tone; but the special reproach against them has always been that they were "not truly scientific." Loud as this outcry has been, I am not aware that (before Ringer and Rickards) a single English medical observer (one or two of Todd's pupils excepted) had ever put to the simple test of the thermometer, Todd's main allegation—that alcohol reduces febrile temperature by its direct action. That very portion of Todd's practice which has excited the fiercest condemnation in this country, viz., his administration of very large doses of alcohol in conditions of high pyrexia, turns out to agree best with the results of physiological investigation, and has in practice been endorsed by such eminent physicians as Liebermeister, Binz, Socin, and many others. The Franco-German war gave abundant occasion for testing this matter; and it was fortunate that Professor Binz received a high medical military post, and that such men as Socin and others, who also filled important medical posts in the war, were willing to carry out his plans with vigor. Those who are acquainted, either personally or through his writings, with Professor Socin (Basle), are aware that a more accomplished observer is not to be found in Europe; it need, therefore, hardly be said that his war experiences of the treatment of pyæmia, erysipelas, etc., possess an uncommonly high value. It is therefore a matter of much importance that we find him stating that in the severe septicæmic wound-fevers he not only employed quinine in enormous daily quantity (20 to 105 grains), but at the same time gave three bottles of wine every day. Under this treatment he saw many unexpected improvements, and even recoveries; and he declares that the wine not only increased the lowering effect of the quinine on the temperature, but that it also much moderated the toxic effects; *i. e.*, the "cinchonine." Erysipelas was also a disease that came very largely under Socin's observations at Carlsruhe, and he speaks here in a different manner. He specially remarks that quinine had but little or no effect in reducing temperature, and all remedies appear to have been unavailing to reduce

the temperature very markedly. Nevertheless, the patients supported the high temperature particularly well, and he attributes this, at least in part, to the administration of three to four bottles daily, of champagne and sherry mixed. The researches of Binz have gone far to prove that the cooling influence of alcohol is not exerted through the heat-regulating centres. In his papers in Virchow's Archiv. (1870) will be found the record of experiments in which the possible interference of such a course was elaborately provided against. And the general result of the inquiries is to reinforce more strongly than any other researches have done for a long time, the opinion that alcohol, while itself oxidized within the blood with great rapidity, hinders the oxidation of the tissues. Hence it can be easily understood that the effect of alcohol in reducing temperature would be most plainly seen in the febrile diseases, when the tissues are being violently consumed, while the supplies of ordinary nutriment are necessarily very small. Such, in fact, proves to be the case, and Dr. Binz has recently informed me (last August) that whereas in smaller doses, *e. g.*, one ounce of wine in half an ounce of brandy, it is usually not possible to obtain a reduction of more than a few decimal parts of a degree, and the dose must be frequently renewed to maintain the effect, he has found that the influence of a very large dose has sufficed to produce a reduction amounting to several degrees. Whether this be, on the whole, the best method of reducing pyrexia by means of alcohol, is a question which will be found more fully investigated in my new researches, which will shortly be published.*

* My own experience in the use of very large doses of alcohol, in the treatment of pyæmia and septicæmic fever, leads me to attribute the unexpected improvements and occasional recoveries more to an antidotal power of the agent than to its influence in reducing temperature. The patients die from poisoned blood, and not from high temperature. Can it be that the reduction of the temperature is only a measure of this antidotal quality of the alcohol?—O.

Selections.

Parasitic Origin of Disease. From Report on Hygiene, by E. A. PARKES, M.D., in British Army Medical Report for 1871, published April, 1873.

The origin of diseases from entozoa, or from low forms of life, fungoid or bacteroid, is so important a subject that it seems necessary to give a brief retrospect of what has been done this year. The progress of observations seem to make it clear that the true fungi must be separated from the class called schizomycetes by Nægeli and DeBary, which includes the bacteria and allied forms. The true fungi produce, for the most part, very obvious diseases, which are situated on the surface of the body or in cavities easily accessible to the air. The schizomycetes appear in all parts of the body, and have been found in the interior of living cells, and may be thus transported everywhere.

DISEASES IN MEN PRODUCED BY ENTOZOA.

Filaria sanguinis hominis.

The most remarkable discovery of the year is that of Dr. T. Lewis, Assistant Surgeon Army Medical Department in Calcutta. He had discovered, some years ago, in the urine of persons affected with chyluria, the young of a small worm belonging to the filaridæ, and he has now found that this worm exists in immense quantities in the blood, and emerges through the kidneys, and occasionally through other channels, as in one case by means of a discharge from the inner canthus of the eye.

The worms are easily detected in the blood, and exist there in great numbers without apparently causing any marked symptoms except those arising from their passage into the urine.

Another parasite has been also discovered by an army medical officer, Dr. Welch. A soldier from India died of phthisis five days after landing at Netley. In the jejunum, immediately beneath the mucous coat, was an oral prominence like a rice grain; this was found to be caused by a parasite .13– inch in length, and .053– inch in thickness. There was a chitinous investing membrane, and at one end a retractile proboscis with a number of hooklets; there was no mouth or intestines, and no distinct segmentation. This is the first time a representative of the acanthocephala has been discovered in the human body, though echinorhynchus are common in birds and fishes. In this man it produced no symptoms.

Dr. Wising, of Stockholm, describes a case of balantidium coli. A man became affected with diarrhea, and passed thin, pea-soup-

like stools. Under the microscope there were remains of food, lymphoid cells, blood, and large numbers of small white worms, which were found to be the balantidium coli described by Malmsten in 1856.

BILHARZIA HEMATOBIA.

Dr. Cattell, of the 10th Hussars, who served for five years in Natal, informs me that the endemic hematuria is almost confined to boys in the Dutch town of Maritzburg; girls do not suffer, and adults only slightly. The drinking water at Maritzburg is taken from open water-courses running along each street, which is often fouled by animals drinking, by ducks, and by surface washings. The boys play in this water, and no doubt drink it in the hot weather. During a residence there of five years, Dr. Cattell had no case among the soldiers' children. The drinking water for the troops is taken from a separate water-course, higher up than that of the town's supply. Dr. Cattell is impressed with the opinion that the drinking water is the source of introduction.

FUNGOID ORIGIN OF DISEASE.

No great advances have been made in this division of the subject. Tilbury Fox has described and figured* the spores and mycelium of the tricophyton tonsuraus in dust deposited from the air of schools in which ring-worm is prevailing. He figures also the epithelium, with apparently the spores of the fungus in or on it.

BACTEROID ORIGIN OF DISEASE.

Before noticing the diseases which have been attributed to bacteria, during the last year, it may be interesting to notice two papers by Oscar Grimm, of St. Petersburg,† and also to extract a few passages from a work by Dr. Eidam.

Grimm first discusses the significance of the terms vibrio, bacterium, spirillum, etc., and then gives a statement of the effect of reagents on vibriones. Strong sulphuric and hydrochloric acids dissolve vibriones; weak solutions act slowly; acetic acid dissolves them very slowly; chloride of ammonium kills them, and then dissolves them; creosote makes the organisms clearer, and the vacuole is then clearly seen; iodine colors them brown; carmine, red; alcohol and ether slowly dissolve them. All the tests show that they are formed of a substance like protoplasm; they are indifferent to the electric current. Grimm describes their movements and their still conditions very carefully. Like other observers, he was not at first able to see the clearage of vibrios, but he at last succeeded in doing so, in both vibrios and spirillum; and he also observed a very interesting phenomenon, viz., the conjugation, or union, of the one-jointed vibriones and their fusion into a two-jointed

* Lancet, January 6, 1872.

† Archif fur Mikroscop Anatomie, B. viii and ix.

link; and subsequently the union of other vibriones, so as to form a many-jointed rod. This union or copulation has been seen in the bacteria of the splenic apoplexy, and in the spirillum undula. He therefore remarks that the single joint is the individual and not the chain of rods. With respect to the origin of the splenic apoplexy, or carbuncular (milz-brand) bacteria, Grimm believes that they are developed out of the protoplasm of the white blood cells. He asks the question, are the germs of the vibriones then present in these blood corpuscles? If so, they are so minute as to be undiscoverable. He considers the spirillum volutans to be only the union of two samples of spirillum undula. So also bacterium enchelys can form long chains, and produce vibrio rugala, or vibrio bacillus. These two last named vibrios are distinguished only by the size of the joints. He has seen all intermediate forms between vibrio lineola and vibrio subsilis. In fact, he doubts whether any distinction can be drawn between the different kinds of vibrios, and he recognizes, indeed, only two forms, viz., spirillum and vibrio. He includes under the term vibrio, the genera vibrio and bacterium of Ehrenberg. He describes, however, a new form, which, if it is really a vibrio, would constitute a third genus.

He has satisfied himself that the vibriones need atmospheric air as nutriment, and also that they are nourished by the absorption of fluid. He has seen them attack spores and acquire a green color, while the contents of the spores were much lessened in amount. He has seen the vibrios take on in the same way a red color from a red fluid which they fed on; and when the nourishment was colorless, the vibrios were also without color.

With regard to the systematic place of the vibriones, he is inclined to put them by the side of the phycochromaceæ, which resemble the vibriones in structure, in their increase through simple division, in their movements, and lastly, in their formation of colonies, with separation of a gelatinous mass.

Some single oscillarineæ, however, resemble vibriones so much that they are distinguished with difficulty. Although there is this resemblance, there is no identity. He agrees with Cohn, that "the "phycochromaceæ may well have been the first organisms on the "earth, as they can only grow in hot, strongly saturated saline "solutions. I think that these organisms, whose joints may be "considered either plants or animals, divide into two branches, "from which the formation of the animal and vegetable characters "takes its rise."

The second author, Dr. Eidam, analyzes with great care the micrococcus theory of Hallier, and his doctrines of infectious diseases; and then passes in review the objections taken by DeBary and Hoffman to Hallier's assertions, and states also the views of Karsten and Bonorden on fungoid development. He sums up his own conclusions in terms as follows: Very important differences of opinion now exist among mycologists. Bonorden denies all

alternation of generation among fungi; DeBary takes a middle course on this point; and Hallier makes the greatest possible use of metamorphoses, and his theory is indeed otherwise impossible. In no other natural science are the differences of opinion greater than in mycology. As regards the infectious diseases, it is extremely probable (ausser ordeutlich wahrscheinlich) that they are caused by fungi or similar bodies.

If it could be decidedly made out that the plasma of spores and mycelium disintegrated in order to form micrococci, and if these little granules could increase, and under favorable circumstances go on to new plants, the present cell theory would be greatly changed. The micrococcus theory has one support; the spores of peronospora, cystopus, etc., divide their contents into globular balls, which individualize themselves more and more, in order finally to take the form of swarms, which burst the spore-coats, and these swarms can bud and develop. If in these spores of large size there is such a division of plasma, and a further development of parts so arising, cannot something similar occur in other spores? The difficulties of experimenting are immense. In cultivating the products of disease, only fresh and bacteria-free substances must be used; blood taken (with all precautions) direct from the body is the best. Nevertheless, in almost every sample of healthy blood, there are many little corpuscles with dancing movements, which it is impossible to distinguish from micrococci. Eidam proceeds to point out the other great sources of fallacy in cultivation experiments, and finally concludes that the micrococcus theory has almost everything against it. It may indeed be questioned, he says, if, on account of their excessive minuteness, these objects can be dealt with with our present instruments, and if it is possible at present to close this controversy. Perhaps even our whole mode of investigation may be wrong, and renewed investigation is certainly indispensable.

It will be seen, then, that the impression made upon an observer of great authority is, that the question is at present impossible of solution, as far as the micrococcus theory is concerned, but on the whole he is adverse to this theory. At the same time he is impressed strongly with the opinion that the infectious diseases are of parasitic origin, and are caused by fungi or some similar growths. In reviewing the observations made during the last year, it will be seen how far fresh evidence has been brought; but the conclusion must still, I think, be that we must yet hesitate before considering that the parasitic theory of infectious diseases has been established.

SPECIFIC DISEASES SUPPOSED TO BE CAUSED BY BACTERIA.

The evidence which has been brought forward during the last year on this subject is interesting in a high degree. As regards cholera, the careful observations of Drs. Lewis and Cunningham, in Calcutta, seem to have disproved the possibility of either fungi

or bacteria being the cause of cholera. In last year's report I gave the evidence of D. D. Cunningham in respect of the discharges, which agreed with that of Lewis on the same point, as showing no such plants as constant constituents. This year both observers have published a joint report on the blood in cholera. When the fresh blood was examined in 128 instances, with very high powers ($\frac{1}{25}$ of Powell, and $\frac{1}{12}$ immersion lens of Ross), no fungoid spores or bacteria, or anything which could be referred to either class, was found; and when the blood was kept, bacteria only appeared in a small number of cases. As far, then, as these fluids (the intestinal discharges and the blood) are concerned, it appears that these high powers failed to detect fungi or bacteria, and that it is in the highest degree improbable that either were present and undetected.

Very different is the case of some other diseases, if the observations of several observers, and especially of Professors Coze and Feltz, of Strasbourg, may be trusted. They assert that in the blood of septicæmia, typhoid fevers and puerperal fever, there is present a linked or chained bacterium, which they term (after Dujardin) *bacterium catenula*, and they believe that the growth of these bacteria is the efficient cause of these diseases; indeed they go further, and assert "that every infectious disease is of bactiferous nature," although the form of the bacteria is different in small-pox, scarlet fever and measles, from what it is in typhoid. The activity and specifity (to coin a word) arise, they conceive, not because they are the carriers of a special soluble principle, but from the rapidity of their multiplication; the form and size of the bacteria depend on the soil in which they are reproduced and multiplied. The various phenomena of the infectious diseases are supposed to be dependent on pathological localization, and these localizations arise from the rapid growth of bacteria; from the detritus formed from them when dead; from the leucocytes which are often simultaneously developed in excess; and from fibrillary deposits of fibrine. The authors attempt to prove these assertions (which, if correct, would largely modify our views of infectious diseases) by microscopic examination, by experiments, and by clinical observations. In their microscopic inquiries they employed Nachet and Verick's glasses (immersion and otherwise), and have worked up to 1,600 diameters, and they used distilled water, the steam of which had passed through a red-hot porcelain tube. The diseases treated of are pyæmia and septicæmia, typhoid fever, small-pox, scarlet fever, measles, and puerperal fever. They also give a chapter on the cultivation of infusoria and on the nature of bacteria. They distinguish between septicæmia and pyæmia, as is now usually done, though the two are often mixed. With respect to septicæmia, the authors showed in 1866 that the blood of animals infected with a poisonous liquid is itself infectious, and that the red globules of the blood are then altered, and a multitude of

bacteria, etc., exist, and that in successive inoculations death ensues more and more rapidly, so that the infectious element seems to gain in activity as it passes through the same organisms. They now support these operations by numerous experiments on rabbits, which are, on the whole, strongly confirmatory of those made by Burdon-Sanderson, and presently to be recorded. Passing over the changes they describe in the red globules, in the white cells and in the fibrine (fibrillary deposits), and referring only to the infusoria, they found always single, double or multiple corpuscles, usually in chains, but looking like little worms. Sometimes they saw the whole element with its grayish or slightly yellowish color; sometimes merely a pale or blackish point (according to the illumination), which was owing to an element seen from above and presenting one end; these points measured .0016 mms.; the complete elements .004 to .02 mms. in length, and .066 mms. in thickness. They had little activity, and resembled bacteria rather than vibriones. They die in the body, and especially in the lungs. The cause of death in septicæmia is considered to be a profound alteration in the blood, tending to, but not usually reaching, putridity, and induced by the countless myriads of bacteridia. In pyæmia there is also often the presence of bacteria, but because there is usually coincident septicæmia, there is in addition or alone numerous embolisms arising from substances introduced mechanically into the circulation (pus, white globules, substances from inflamed veins), and these may exist without any bacteria. The authors thus draw a broad line between the two affections.

In typhoid fever, experiments were made with blood taken from human typhoid patients and injected into the blood of rabbits. An infectious disease (with implication of Peyer's patches) was given to the rabbits, whose blood was able to communicate the disease to other rabbits. The dried and powdered blood of an infected rabbit preserved its power to produce infection for more than a year. In the blood of men and rabbits there were (in addition to alterations in the red and also largely in the white globules), a great number of bacteria, smaller in size than in the septicæmic blood; they were often divided, as in septicæmia, into three, four or five segments (*B. catenula*). The evidence of the presence of bacteria in typhoid blood seems to be complete, but it is, of course, still an open question whether they are the cause of the typhoid fever, and it even appears from some of the *post mortem* histories that bacteria were not always found in the blood. The examinations of typhoid blood during life appear also to have been very few in number.

With regard to small-pox, the observations of Chauveau and Sanderson have proved that the infectious property resides in the solid glistening particles. Whether these glistening particles are bacteroid or not is a matter of dispute. Beale, their discoverer (in

1865), considers* that in vaccine lymph they consist "of a peculiar kind of living matter, the smallest particle of which, when supplied with its proper pabulum, will grow and multiply." Variolous pus contains similar particles, and in both cases they are portions of bioplastic matter. Three years afterward Keber described inconceivably minute organic corpuscles in variolous blood, in which a lively cellular growth took place, and Hallier and Zurn have observed similar particles in the lymph of the sheep-pox as well as in human small-pox. Dr. F. Cohn† has now convinced himself that these particles are "living uni-cellular organisms belonging to the group of the so-called globular or sphere bacteria (*Kugel bacterien*)." He considers that he has absolutely proved this, and he details his method (which is based on that of Burdon-Sanderson), by which be believes he has excluded all chance of foreign admixture. The appearances of vaccine and variolous lymph were identical; there were numerous extraordinarily small globular particles with no proper movement, but with only molecular movement; they were easily overlooked, as their refraction power is the same as that of serum. The immersion lens finds them most easily; their size is under .001 mm., perhaps about one-half or three-fourths of this size; there are some larger bodies which Cohn takes to be clearly cells. At first the molecules are separate, but they hang together like a figure of 8; these double cells increase after a short time, and there may be four or more hanging together and forming chains, and in one or two hours there are chains of eight divisions, and sarcina-like bodies are formed, and then all sorts of groups appear. These bodies Cohn considers to be the same as the micrococci of Hallier, but he does not desire to use this word, which may give rise to misconception, and proposes the name of "microsphœra," as identical with "Kugel-bacteria," and places them, of course, in the family of the schizomycetes. With respect to the question whether these "microsphœræ" are the bearers of the contagion, Cohn alludes to Chauveau's investigations, and considers it is most probable that the question must be answered in the affirmative. The authority of Ferdinand Cohn in a matter of this kind is so great that it would seem we must admit that the sinall points first described by Beale are really bacteria; at the same time, Beale has worked with such high powers, and is so expert in these investigations, that a further inquiry may perhaps still be demanded before Cohn's view is definitely admitted. Coze and Feltz state that they found articulated bacteria in immense quantities in the blood of the human subject attacked with small-pox, and, on injecting this blood into rabbits, they produced feverishness and bacteria similar to those in the variolous blood which were found in the rabbits' blood. In variolous blood

* "Disease Germs," 2d Edition.

† "Virchow's Archiv," Band 55, page 229. 1872.

they have also found round globules, armed with points, which they consider to be bacteria fixed to a globule. They also noticed many deposits of fibrine, as in typhoid fever. The kind of bacteria, they state, resembled the *B. bacillus* of Pasteur, and the *B. termo* of Muller, and are quite different in aspect from those of septicæmia and enteric fever, as in septicæmia the transmission of the virus through successive rabbits seemed to heighten the virulence of the poison.

In scarlet fever blood these authors have also found bacteria, which, when transported into the system of rabbits, largely increased in size. In man their length was .0006 mm., and their breadth .0002 mm.; in the rabbit they were eight times as big. The injection of human scarlatinal blood into rabbits produced a fatal, feverish disease.

In measles, extremely small and mobile bacteria were found, but the blood of measles was not toxic to rabbits The authors state that the blood taken from a part of the skin covered with eruptions contains many more bacteridia than the blood taken from the sound part of the skin, and believe, therefore, there is a connection between the eruption and the number of bacteroid elements; in other words, we presume that they mean to affirm a great local development of bacteria in the vessels of the skin.

In the blood of puerperal fever, the authors found (in all infectious diseases) the following changes: deformed red globules, augmentation of leucocytes, fibrillary deposits of fibrine and chains of bacteria, and the same characters were found in the blood of rabbits poisoned with injection of puerperal fever.

The observations of Coze and Feltz on septicæmia are strongly supported by the beautiful experiments of Burdon-Sanderson and Klein, and by the observations of Klebs, of Davaine, and several others. Sanderson and Klein have found bacteria in septicæmic and pyæmic blood, and have also confirmed in another way the curious observations of Coze and Feltz, that by successive inoculations the virus increases in intensity. If a pyæmic fluid is transferred to the peritoneum of a guinea-pig, and is allowed to remain there for a couple of days, and is then introduced into another animal, its toxic power has so increased that it has acquired the most deadly activity. "All such extremely active liquids were crowded with bacteria of a peculiar character, the increased number of which seemed to be in proportion to their toxic properties."

Dr. Sanderson believes that bacteria "afford a *characteristic*, by which we may distinguish the products of infective inflammations from those which are non-infective, and that their number affords an indication of their degree of infectiveness." Dr. Sanderson, however, believes, from actual experiment, that the ordinary bacteria of putrefaction have no toxic action; and he is not prepared, at present, to say that the bacteria of septicæmia are the toxic agents. He regards them as the inhabitants of infective fluids, and as, very probably, carriers of infection.

The work of Klebs, which is based upon observations in Carlsruhe, during the war of 1870-71, is remarkable in various surgical aspects, but in none more than the statements made as to the chief cause of death after wounds. He notices that the differences in the amount and fatality of wound-fevers, and pyæmia and septicæmia, cannot be dependent on the physical condition of the pus, for it is of all kinds of finenesss and coarseness.

A fine microscopic examination has convinced Klebs that the cause of secondary pus formation lies in the presence of "putrefaction fungi" (Faulnisspilzen), which he terms microsporon septicum. He confirms entirely the statements of Recklinghausen and Waldeyer, and, though he does not allude to him, his observations seem confirmatory of Lister's. The method in which it is sought to prove that this parasite is a pus and fever-making cause is two-fold: an anatomical and a physiological. With regard to the first, the microscopic examination showed bacteria, vibriones, and monads in almost all cases of wound secretions. The bacteria are often motionless, rod-like bodies; often joined together, so as to form long jointed fibres; there were, also, numerous microspores, that is, extraordinarily small glistening particles, either free, and then having oscillatory movement, or in groups (zoogloœ-form), or in chaplets. These bodies are found in good as well as in bad pus, but they are sometimes wanting in good pus. These parasites are, Klebs thinks, the same as those described by Huctor and Tommasi in the diphtheritis of fresh wounds.

Commencing in the secretion on the outer surface, the parasites attach themselves to the soft parts, and colonize there, and form zoogloœa-masses, just as they may be artificially grown on the mesentery of the frog.

The colonies extend themselves on all sides, unless they meet with a cleft, which interposes a chasm, or produces mechanical compression, which destroys them. They destroy the surface in this way, and then they penetrate the lymph and blood-vessels, and get to the inner organs. Sometimes they eat through the wall of a vessel, from outer to inner coat, and, getting into the vessel, cause coagulation.

Of the parasite, many penetrate into soft tissues, which they easily destroy, though the hard bones and tendons resist them. They penetrate into the interstices of the loose connective tissues, either directly or are assisted by those forces which aid in moving the lymph. This latter mode is very important. When the parasite passes into the connecting tissue interspaces, the permanent cells are destroyed by the mechanical pressure, but in the spaces are found the wandered white-cells. The parasites pass into these wandering cells (which have come from the wound surfaces apparently, and contain often hæmatoidin), and then are traced into the lymphatic glands. A general infection of the system occurs very slowly in this manner, and the spread of

the parasite-holding cells beyond the lymphatic glands is very difficult to prove. The parasite arrives in the muscles from the connective tissue spaces; then, during the contraction of the muscular fibres, the spaces between them are widened, and neighboring fluids are drawn by aspiration into the spaces. In the succeeding period of muscular relaxation the solid particles in the fluid are not driven out again. Then occurs the well-known interstitial myositis and pus building.

The general infection of the body arises most commonly by the infection of the blood, and the transference to various parts; the little thromboses, which are found behind the valves in the veins, are caused by the adherence of the microspores to the walls; by their colonization and growth there, and by the irritation and pouring out of a fibrino-plastic substance on the walls, a coagulating influence is exerted on the blood, and, perhaps, also the ante-coagulating influence of the walls, pointed out by Brucke, is removed.

These thromboses may remain on, and often form pus. Then the organs suffer; the lungs especially, from the mechanical arrest of numerous solid parts, or sometimes from coagula in the vessels.

Klebs enters at considerable length into the thrombosis and coagulation in the lung vessels in septicæmia, and then passes to the hepatic abscesses, which seldom arise from emboli, but from the distribution of the microspores in the capillary vessels, which are distended, press on the liver cells and destroy them.

Klebs concludes that the opinion which looks upon these parasitic elements as merely unessential and accidental attendants of suppuration and inflammation, must be given up, as complete proof has been obtained that the local mycosis precedes these processes. But, in addition, Drs. Zahn and Tiegel have succeeded in filtering the parasitic masses. The clear fluid caused heavy but transient fever, but never caused local suppurations; the same fluid, containing the parasites, caused extraordinary wide-spread suppuraations. Zahn's experiments have, however, been doubted.

Finally, in the splenic apoplexy, or carbuncular diseases, (Milzbrand) of sheep and cattle, in which bacteria were discovered by Brauell, Davaine, and others, it has been asserted by Dr. V. Grimm, of St. Petersburg, that no bacteria were found in the blood during life. But this has been contradicted in a note by Dr. Semmer, of Dorpat, who, not only from his own observations, but from those of Unterberger, in Dorpat, and Nayorski, in St. Petersburg, entirely confirms Brauell's statement of the constancy of the occurrence of these bacteridia in the blood of carbuncular disease.

All of the above noted affections belong to the strongly marked class of infectious diseases; but some observations have also been made on fatal cases, which are allied to these infectious disorders.

NON-SPECIFIC DISEASES ATTRIBUTED TO BACTERIA.

Mycosis endocardii.

Under this term, Professor Winge, of Christiana, described, in 1869, a case of ulcerous endocarditis, in which there were numerous fungoid filaments on the several valves, and in the little embolic masses which were found in the heart. The vegetations were like fibrinous threads, but, under an immersion-lens, their characters came out clearly; there were partitions, and the threads were branched. There was detritus and granular heaps, very similar to bacteria rods, while the threads were like leptothrix-mycelium. The case came on after the man had opened a suppurating corn, with repeated shiverings, followed by severe headaches, diarrhœa, and typhoid-like symptoms.

Another case of a similar kind is now recorded by Professor Heiberg, of Christiana. It was the case of a puerperal woman, who, on the tenth day, had shivering and vomiting, followed by swellings in some joints, and vesicles on the skin of the extremities. She died in about five weeks. On *post-mortem* examination, there was ulcerous endocarditis, and thrombosis of the mitral valve, with fungoid growth. There were metastatic abscesses, metrolympho thrombosis, and lung œdema, and hyperæmia. On a microscopic examination of the cardiac valves, and of the coagulæ adhering to the chordæ tendinæ, there were numerous fine granules, and many rod-like bacteria—similar bodies and leptothrix chains. There was no fibrine, but many white corpuscles in the thrombus masses. The chains and links entirely agreed with those observed in Winge's case. The author gives reasons why in both cases, the plant could not have been a *post-mortem* appearance, but that they were developed *intra vitam*. Detached portions of the vegetation produced emboli. The plant is referred to the schizomycetes (of De Bary), and not to the true fungi.

A sample was transmitted to Virchow, who considers the granules decidedly of parasitic nature, and to be vibrional.

The case is very similar to two described by Virchow, of puerperal ulcerous endocarditis, and in which, also, there were peculiar granules in hyaline connecting masses, and which Virchow identified as parasitic.

DIPHTHERITIC NEPHRITIS CAUSED BY SCHIZOMYCETES.

Dr. Letzwich describes a case of diphtheritis of both tonsils, and swellings in the neck, in a child two and a half years old, which was followed by suppression of the urine, and death. On examination, the venal tubules (straight and contorted), and the malpighian corpuscles, were found crowded with the spores of a fungus; where the fungoid masses were most numerous, the epithelium had disappeared, and the fungi lay close to the basement membrane. The canals were greatly enlarged by their pressure,

and the vessels compressed. If the epithelium still existed, it was crowded with spores, and often enlarged to double its natural size. No fungi were found in the spleen or liver, but they were present in the arteries of the kidneys. The cessation of the urinary secretion was purely mechanical. Although the writer uses the term fungus (pilus), his figures only show small round cells, like spores certainly, but which might possibly be bacteroid.

UTERINE DIPHTHERITIS AND BACTERIA.

Waldeyer describes four cases of puerperal fever, with diphtheritic exudation on the internal surface of the uterus; this layer, and the contents of the lymphatics, the co-existent peritoneal, pleuritic, and pericardiac exudations, were found to contain masses of bacteria between the pus corpuscles and the mortified tissues, and bacteria were found even in the pus corpuscles. The form was the "Kugel-bacteria," of Cohn (already noticed.) While Waldeyer does not lay an extreme weight on these appearances, he considers they cannot be indifferent, and refers to the nephritis diphtheritic of Klebs and Recklinghausen. His observation on the presence of bacteria within pus cells is confirmatory of Beachamp's and Estor's observations, and of Bastian's remark on the presence of bacteria in living cells.

BACTERIA IN THE VESSELS OF THE BRAIN.

In a case of rheumatic fever, which died with an excessively high temperature, Bastian found outside and in the central vessels (surface of convolutions), a large number of actively moving particles. many of these were distinct and large bacteria, made up of "two almost cellular segments." Bastian says these bacteria must have existed in the blood during life, or have been produced in the vessels after death, and before the skull was opened. He inclines to the latter opinion, and states that it influenced him in his views of spontaneous generation. But there are now so many cases of bacteria in the blood during life, that it seems much more probable there was some "foyer" which furnished those found in this rheumatic case.

Reports of Societies.

Chicago Society of Physicians and Surgeons. *Transactions at Meeting of January 26th, 1874. Reported by* PLYM. S. HAYES, M.D.

The Society met as usual in the parlor of the Grand Pacific Hotel, the President, Dr. Fisher, in the chair.

Drs. E. Andrews and W. Blanchard were elected to membership.

The Secretary read a paper written by the President, Dr. Fisher, on the Progress of Medicine. The paper reviewed the advances made in medical science to the present time, and compared the slow progress of this science before the commencement of the nineteenth century with its rapid advance since that time.

Dr. C. P. Simon reported the case of a young man who had taken about dr. iij. of tr. opium. When discovered, three hours before the doctor was summoned, the body was motionless and pulseless. When the doctor arrived he found the extremities cyanosed and cold; the neck and lower jaw rigid, the pupils dilated, and the iris brilliant and phosphorescent. No pulse could be detected, and there were no respirations. Upon applying his ear to the chest, the doctor thought he was able to detect feeble pulsations, which averaged thirty to the minute. Ten minutes after his arrival the pulsations had entirely ceased.

Dr. Etheridge then related the following case of opium poisoning. When he first saw the patient, there were twelve stertorous respirations and forty-eight pulsations to the minute. After a time the respirations ceased entirely for about eighty seconds, after which they were resumed with an audible sound, and then the respirations which were quiet and normal, gradually grew more and more shallow and stertorous until they again ceased. The periods of cessation varied from fifty to one hundred seconds; while those of respiration continued to take place from eight to ten minutes. During the cessation there was a tremor of the intercostal muscles. The restorative means used were, the stomach pump, and atropia, given by the mouth. Half an hour after the atropia had been given, the pupils gradually dilated until death occurred, eight hours after the doctor had been called.

Dr. Trimble cited two similar cases in which atropia and artificial respiration had been used; in one of the cases faradization had also been employed; both recovered.

Dr. Wilder related the case of a man who took tr. opium, oz. ij. Although emetics, belladonna, artificial respiration and friction were used, the patient died. The pupils dilated after the belladonna had been given.

Dr. Bartlett mentioned a case of poisoning from a belladonna plaster which had been applied for threatened mammary abscess. The patient was taking morphine all of the time. He also gave the case of a child who had taken tr. opium, dr. j. He was called soon after the drug had been taken, and not having a stomach pump at hand, introduced a catheter in place of the tube of the pump, filled the stomach with water and then reversed the child, when the contents of the stomach escaped.

Dr. Etheridge stated that larger doses of opium and belladonna could be borne when given together than when given separately; the toxic effect of the one neutralizing that of the other; and cited Dr. Brown-Sequard as authority.

Dr. Powell remarked, that he used after an operation one-half gr. of morphia and one-sixtieth gr. of atropia hypodermically; the action of the morphia being thus continued much longer than when given alone.

Dr. Trimble introduced a resolution requiring the President to appoint a committee of three on necrology at each annual meeting.

Dr. Danforth is expected to read at the next meeting, a paper on the pathology of the late cholera epidemic, illustrated by means of a solar microscope.

The society then adjourned.

Meeting of Feb. 9, 1874.

The Society met as usual in the parlor of the Grand Pacific Hotel; the President, Dr. Fisher, in the chair. Drs. J. H. Hollister and W. T. Montgomery were unanimously elected to membership.

Dr. Hyde read the following communication:

CHICAGO, Ill., Feb. 9, 1874.

Dear Sir—I have the pleasure of presenting to the Chicago Society of Physicians and Surgeons, in behalf of Assistant Surgeon John S. Billings, U. S. A., the librarian, the accompanying two volumes of the catalogue of the library of the Surgeon General's Office, U. S. Army.

Very respectfully, W. C. SPENCER,
Surgeon U. S. Army.

Dr. J. N. HYDE, Sec. Chicago Society of Physicians and Surgeons.

A vote of thanks was tendered to the Surgeon General.

Dr. Danforth's report on the Pathology of Endemic Cholera, was read by Dr. Bridge. The report mainly consisted of the history, necroscopy, and microscopical examination of two cases of patients that died in the cholera hospital last summer. Dr. Danforth explained the sections of normal and pathological intestines, which he had prepared. These were projected on the screen by means of a solar microscope. The instrument used was one of Browning's spectroscopic lanterns, with microscopic attachment. The lantern had been recently presented to Rush Medical College by Mr. A. C. Thomas, and kindly loaned to the Society by the college.

A vote of thanks was given to Dr. Danforth for the paper and exhibition of microscopical illustrations.

The following resolution was adopted:

Resolved, That the report be given to the Secretary for publication in some medical journal.

As the hour was late, the discussion of the paper was made the business of the next meeting.

The meeting then adjourned.

☞ Reports of meetings of the Central Illinois Medical Society, which have been placed in type, have been unavoidably crowded out of this No., but will appear next month.—EDS. JOURNAL.

Editors' Book Table.

NOTE. — All works reviewed in the columns of the CHICAGO MEDICAL JOURNAL may be found in the extensive stock of W. B. KEEN, COOKE & CO., whose catalogue of Medical Books will be sent to any address upon request.]

Dunglison's Medical Dictionary. A new edition, enlarged and thoroughly revised, by RICHARD J. DUNGLISON, M.D. Philadelphia: Henry C. Lea. 1874.

Dunglison's Medical Dictionary has been a source of national pride to American physicians during the lifetime of the majority of those now in the profession. It has been no small boast to be able to claim, as our own, one of the best, if not the very best work of the kind which has ever appeared in any language. It might almost be termed an encyclopædia of medical sciences. It would be entirely superfluous to attempt a criticism of what has been the *vade mecum* of our professional lives, and is a familiar friend to all. We shall, therefore, only say to those who have found the old editions indispensable, that this only can still less be spared from the study table. The additions made by the Editor of the present edition, in order to keep up with the recent advances in medical and collateral sciences—more than six thousand words—one hundred and sixty pages—constitute, in themselves, a lexicon of no mean proportions nor feeble merit.

Dr. Dunglison could not have chosen a field of labor more prolific in fruit, more universally beneficial in its results, and more honorable to himself, than the reconstruction and elaboration of this monument of the genius, the industry, and the scholarship of his distinguished father. H.

Sphygmograph: its Physiological and Pathological Indications. The Essay, to which was awarded the Stevens' Triennial Prize by the College of Physicians and Surgeons, New York, April, 1873 Two hundred and ninety illustrations. By EDGAR HOLDEN, A.M., M.D. Philadelphia: Lindsay & Blakiston. 1874.

The invention of the sphygmograph by Marey attracted the general attention of physiologists, both in America and in Europe; for to it all looked as to the agency by whose means the pathological significance of changes in the circulatory system were to be unfolded, and its practical application was expected by many to

initiate a new era in physical diagnosis. That the instrument has failed to fulfill these expectations has been for a long time apparent, and it is gratifying to recognize in Dr. Holden's Essay an effort to explain the reason why, and to demonstrate that "the question of real moment does not relate to the practical utility of any given sphygmograph, nor yet of the sphygmograph in its best known signification, but to whether there is any deep meaning in the blood current of the accessible arteries of value in physiology, pathology, or therapeutics, which may be accurately ascertained and recorded."

Convinced that the unsatisfactory results hitherto attained through the instrumentality of the sphygmograph were due to erroneous modes of construction, Dr. Holden directed his attention to the accomplishment of such modifications in the mechanism of the instrument as should obviate the causes of previous ill success. Perceiving that the instrument hitherto constructed was capable of utilizing the *lifting* power of the artery only, he attempted to construct a new one, which should be capable of utilizing the *displacing* power of the artery likewise. That this power of displacement is much more readily recognizable in its manifestations than the lifting power alone, is shown by the increased amount of pressure applicable to the artery by Holden's than by Marey's, Austin's, or Sanderson's instrument, viz., 700 to 1100 instead of 100 to 200 grammes respectively. The author claims for his instrument the advantages of ready applicability, and a diminution of two-thirds in its cost.

The chapter on arterial tension will repay careful study—in view of the prevailing obscurity and indefiniteness in the application of the term by practical writers—and in it the great importance of a correct appreciation of this condition in its relations to "the equilibrium of pressure, so essential to health," is rendered apparent.

The Essay epitomizes the results of several thousand sphygmographic tracings taken from cases of disease, more especially of some portion of the circulatory, respiratory, or nervous mechanism. The observations bear the impress of good faith, and of a desire to exhibit, honestly and fairly, the capacity of the instruments as a means of diagnosis, and not to uphold any pet theory.

Dr. Holden has, moreover, not limited the scope of his observa-

tions to the analysis of pathological conditions alone, but has extended them to experiments upon the determination of the effects of certain drugs upon his own person. Cannabis indica, gelseminum, aconite, and quinine, were administered experimentally, and their effects upon the circulation carefully measured by the sphygmograph, the collateral effects upon the nervous system being noted coincidently.

Dr. Holden's Essay is entitled to more than ordinary perusal; it deserves special study. Should it meet with the consideration it deserves, it will have initiated a new era in the history of the sphygmograph, which may culminate in its utilization as a means of diagnosis to a degree as yet inconceivable.

The style of the work is polished and elegant, proclaiming its author not only an earnest worker, but an accomplished scholar.

The typographical excellencies of the book entitle Messrs. Lindsay & Blakiston to the sincere thanks of all students, whose *res angustæ domi* compel them to use the day for labor and the night for study. H.

The Anatomists' Vade Mecum. A System of Human Anatomy. By ERASMUS WILSON, F.R.S. Edited by GEORGE BUCHANAN, A.M., M.D., Surgeon and Lecturer on Clinical Surgery, at the Glasgow Royal Infirmary, Professor of Anatomy in Anderson's University, assisted by HENRY E. CLARK, M.R.C.S. Ninth edition. Philadelphia: Lindsay & Blakiston. 1873.

Criticism of a work which has reached its ninth edition would be attempted too late, were one able to find an excuse therefor in this excellent treatise. A casual inspection of the book presents much that is attractive, and a more careful examination confirms and strengthens these favorable impressions. Its small size is a great advantage, contrasting favorably with the imposing dimensions of many of the volumes which have recently issued from the press, and which are indebted for their dimensions as much to padding as to their essential matter. The condensation of such a vast amount of valuable matter into so small a compass, is not only evidence of the admirably terse and concise style of the language, but likewise a great boon to students forced to realize so constantly that "life is short and art is long."

The different subdivisions of the subject matter have been carefully revised, and the contents brought down, or rather up, to the

state of anatomical knowledge at date; they are more than usually complete. This may be especially said of the chapters on the nervous system, and of those upon the organs of special sensation. In the former we should have been glad to see a variation, which a due regard to physiology seems by this time to demand, in the phraseology by which a nerve trunk is described; thus, for example, instead of "the ophthalmic nerve arises from the upper part of the Gasserian ganglion," etc., etc., describe it as terminating there after arising from various points of origin, at which it receives impressions to be transmitted to the brain. The closer the association of anatomy and physiology in our text books, the more rapid will be our progress in the acquisition of that accurate knowledge of both, upon which alone rational medicine may rest.

The work is profusely illustrated, and the wood cuts are good, many of them, and those of the best, new. Taken altogether, it is the most attractive, and will prove to be the most useful manual of special anatomy accessible to the English speaking student.

H.

A Handbook of Medical and Surgical Reference. By JNO. A. WYETH, M.D., Member of the New York Pathological Society, etc., etc. New York: William Wood & Co., 27 Great Jones street. 1873.

A little book, which cannot fail to be very useful under the circumstances for which the author designed it, liable, however, to the objection which may be urged against all works of similar character, *i. e.*, the encouragement of indolence and routinism. This objection, indeed, the author deprecates, in advance, in his preface.

Although the suggestions in the work are all taken from standard authorities, we must presume to question the value of some of them, which appear to have the sanction of prescript and antiquity alone; *i. e.*, on page 83: "Apoplexy. If the apoplexy be dependent on active congestion, and the heart act with abnormal power, if there is a strong throbbing, resisting pulse, and the patient be full and plethoric, *blood letting* is indicated. Nine or ten ounces may be drawn from the *external jugular vein.*"

Apoplexy designating hæmorrhage into the cerebral ventricles, a condition in which a quantity of blood has been already withdrawn from the circulation, and most immediately from the circu-

lation of the brain, we fail to see how the condition can be corrected by the removal of more blood.

We would have been glad to see the credit for the discovery of "Bibron's Antidote" (page 85) for snake bite, given to Dr. Daniel Brainard, of Chicago, to whom it belongs, instead of the mythical Bibron, whose existence was long ago shown to have depended upon a typographical error. On page 110 the use of gradually increased doses of strychnia for the relief of chorea, is attributed to Dr. Hammond; the credit properly belongs to Trousseau. The book is excellent of its kind, although we do not like this kind of book. H.

BOOKS RECEIVED.

Dunglison's Medical Dictionary—Henry C. Lea.
Clinical Researches in Electro-Surgery—By JULIUS E. ROCKWELL, M.D., and GEO. M. BEARD, M.D. William Wood & Co., N.Y.
Lecture on Bright's Disease—JOHNSON. Geo. P. Putnam's Sons, N. Y.
Anatomists' Vade Mecum—Wilson & Buchanan.
The Sphygmograph—EDGAR HOLDEN, M.D. Lindsay & Blakiston, Philadelphia.
A Handbook of Medical and Surgical Reference—WYETH. William Wood & Co., N. Y.
Bellamy's Guide to Surgical Anatomy—Henry C. Lea, Philadelphia.
Barnes on Diseases of Women—Henry C. Lea, Philadelphia.
Diseases of Children—MEIGS and PEPPER. Lindsay & Blakiston, Philadelphia.
Sanitary Association during the Franco-German War, 1870–71. Vol. 1. The American Ambulance. THOS. W. EVANS, M.D., D.D.S., Ph.D. London: Sampson, Low, Marston, Low & Searle, 1873.
Physicians' Office Case, Record and Prescription Blank Book—GEO. E. WALTON, M.D., Cincinnati, Ohio.
Griffith's Universal Formulary—MAISCH. Henry C. Lea, Philadelphia. 1874.
Wythe's Dose Book—Lindsay & Blakiston. 1874.
Galvano-Therapeutics—PRINCE. Lindsay & Blakiston. 1874.

JOURNALS RECEIVED.

The Clinic—Cincinnati, Jan. 10, 17, 24, 31, Feb. 7.
The Medical Times—Philadelphia, Jan. 10, 17, 24, 31, Feb. 7.
The Pharmacist—Chicago, Jan. and Feb.
The Medical and Surgical Reporter—Philadelphia, Jan. 17, 24, 31, Feb. 7.
The Journal of Chemistry—Boston, Jan. and Feb.
The Detroit Review—Jan. and Feb.
The Eclectic Medical Journal—Cincinnati, Jan.

The Vermont Medical Journal—Burlington, Jan. Vol. 1, No. 1.
The Southern Medical Record—Atlanta, Dec. 1873 and Jan. 1874.
The Physician and Surgeon—Baltimore, Jan.
The Central Law Journal—St. Louis, Jan. 8, 22, 29, and Feb. 5.
The Druggists' Circular—Jan. and Feb.
The Buffalo Medical and Surgical Journal—Dec. '73 and Jan. '74.
The Indiana Journal of Medicine—Indianapolis, Jan.
The Medical Examiner—Chicago, Jan. and Feb.
The American Practitioner—Louisville, Jan. and Feb., '74.
The Chicago Journal of Nervous and Mental Disease.
The Half Yearly Abstract of the Medical Sciences—STONE.
The Kansas City Medical Journal—Jan.
The Braithwaite's Retrospect—Jan., '74.
The Canada Medical and Surgical Journal—Montreal, Jan.
The Medical News and Library—Jan. and Feb.
The Boston Medical and Surgical Journal—Feb.
The New York Medical Record—Jan. 15 and Feb. 2, '74.
The St. Louis Medical and Surgical Journal—Feb.
The American Journal of the Medical Sciences—Jan., '74.
The New York Medical Journal—Feb.
The Nashville Journal of Medicine and Surgery—Jan.
The Richmond and Louisville Medical and Surgical Journal—Jan.
The Canada Medical Record—Montreal, Jan.
The Practitioner—London, Jan.
The Lancet and Observer—Cincinnati, Jan.
The Pacific Medical and Surgical Journal—Jan.
The North-Western Medical and Surgical Journal, Jan.
The Atlanta Medical and Surgical Journal—Jan.

PAMPHLETS RECEIVED.

Galvano-Therapeutics—PRINCE.

Formulæ for Elixirs—American Pharmaceutical Association. HANCOCK, J. F.

Transmission of Syphilitic Contagion—R. W. TAYLOR.

Report on the Immigration Service—By JNO. M. WOODWORTH, M.D., Supervising Surgeon of Marine Hospitals.

Transactions of Indiana State Medical Society.

The Larynx the Source of Vowel Sounds—By THOMAS BRAIN GUNNING, New York.

Report of the Committee on the Yellow Fever Epidemic of 1873 *at Shreveport, La.* 1874.

Report of the Board of Managers of the Western Lunatic Asylum of Kentucky.

Transactions of the Illinois State Medical Society.

Transactions of the American Ophthalmological Society.

Editorial.

"Here lies the water; good: here stands the man; good: If the man go to this water, and drown himself, it is, will he nill he, he goes; mark you that: but if the water come to him, and drown him, he drowns not himself: argal, he that is not guilty of his own death, shortens not his own life.

"But is this law?

"Ay, marry is't; crowner's-quest law."—*Hamlet, Act V, Scene I.*

Here lies the water; good: here stands the man; good: If the man be carried to the water, and held under the water, once, twice, three times, four times, and be drowned, it is a rupture of the heart, because it was fatty; mark you that.

But is this law?

Ay, marry is't; crowner's-quest law.—*Illinois State Prison Reports.*

Thus has the conjoined wisdom of the State Prison Commissioners, the State Prison Dentist, and the State Prison Coroner's Jury settled the vexed question in æsthetics, and demonstrated that a man may die of a broken heart.

But the cause, think of it! fatty degeneration, and in a convict, too! Truly here is a subject for the investigation of legislative economists. What lives of slothful ease and luxury these convicts must lead. Board and clothing at the expense of the State; dentist's bills reduced to "the cost of the gold," and then to die of fatty degeneration and hydropathy.

A broken heart would certainly be a curiosity in this matter-of-fact age. What has become of the one which once, questionably, graced the poor body of the wretched convict, Henry Williams, and, unquestionably, disgraced the authorities of the Illinois State Prison? It was said to have been submitted to a skillful surgeon, and to an expert pathologist and microscopist of this city. Why have they not been called upon to testify to the facts? They are both as well known for their integrity as for their skill; they will both speak the truth, the whole truth and nothing but the truth, when called upon.

Do the authorities fear this? As the matter stands now, it bears this construction. We have waited patiently for the facts in refer-

to the Williams homicide. We have had, thus far, opinions only; the opinions of the commissioners; of the individual who fills the position of—that is to say, the teeth of the convicts; of the peculiarly disinterested gentlemen who practice hydropathy for the cure of malingering and self-abuse; of that sapient body the coroner's jury; and, also, of volunteers, whose official duties lie in quite another direction. Now, these opinions are all valuable in direct proportion to the public's credulity. Science and Justice demand facts; demand to be assured by competent, and, not only competent, but reliable testimony, what was the condition of the heart of the convict, Henry Williams; was there fatty degeneration, or was it sound? was it ruptured, or was it cut by the scalpel of the careless dissector, running too far through the costal cartilages, or designedly, after the removal of the organ, to make that appear an accidental homicide, which uncharitable people might call a murder? Until these facts are adduced and established, these same uncharitable people will continue to call the act, by which Henry Williams was "cut off even in the blossoms of his sin, unhousel'd, disappointed, unanel'd; no reckoning made, but sent to his account with all his imperfections on his head," murder. H.

A few Words to Correspondents.

Please don't write to us, asking that "my name be added to the "long list of subscribers to your valuable journal, and send speci- "men number by mail to my address, when I will remit amount of "subscription." This would necessitate a ride of a mile and a half to our Publishing House, and a loss of time worth more than the annual subscription to the Journal. You can accomplish your object *tuto cito et jucundo* by remitting the amount of the subscription directly to the publishers, who will immediately, on its receipt, forward the JOURNAL to your address.

Please don't send us long speeches on festive occasions, with the request, to "return the manuscript." These belong to the department of "rejected addresses," the return postage upon which would necessitate serious alterations in the Post Master General's estimates.

Send reports of your own cases in practice. Not the rare and remarkable ones only, but those of every-day occurrence; as it is these, and not rare cases, that medical men have to treat. Reports of epidemics possess great value, and should include history, local-

ity, personality, and surrounding circumstances of first cases; course and progress of disease; symptomatology; modes of treatment, both successful and unsuccessful; duration, mortality, etc.

There can be no doubt that practical experiences of physicians, if carefully recorded, would have, long since, furnished sufficient data for the deduction of new principles, and for the decision of many questions *adhuc sub judice;* and it is impossible to say to how great an extent the progress of medical science has been retarded by the neglect to report cases in practice.

In order to do justice to our correspondents, we publish their communications in the order of their reception (with very rare exceptions); and hence are compelled to withold from publication valuable papers for several months; and, in order to do justice to our readers, we have been compelled to reject a number not adapted for publication in our columns.

The JOURNAL is designed to be an index of advances in medical sciences, a mirror of practice, and the mouthpiece of the workers in the profession, through which they and their labors may become known. It cannot become a vehicle for professional advertising.

Elixirs.

We have, on several previous occasions, denounced the habit, indulged in by too many medical men, of prescribing for their patients the various fraudulent compounds known to the drug trade as elixirs. No physician has a moral right to prescribe for a patient an agent of whose composition and probable effects he is totally ignorant; and of the composition of these so-called elixirs he is, for the most part, entirely ignorant. It is true, that for many of them formulæ have been published, by which, it is alleged, they are prepared, and thus a cloaking (in the shape of a label) of legitimacy is assumed. It is likewise true, that many of them are not prepared in accordance with these alleged formulæ, and, moreover, could not be, as they suggest pharmaceutical paradoxes.

The difference between these and the old fashioned patent medicines of Ayer, Brandreth, Holloway, *et id genus omne*—which, by the way, they seem to have nearly supplanted—is simply a difference of form, not of principle. The best that can be said in their favor is, that the majority of them are utterly worthless, as far as any therapeutic activity is concerned.

We are very glad to see that the American Pharmaceutical

Association has taken up the consideration of this traffic, with a view to its suppression. The report of its committee, appointed at its last—the twenty-first annual—meeting, has just been received from Prof. Maisch, the permanent Secretary of the Association. The report contains numerous formulæ for the preparation of elixirs, which are proposed for adoption into the Pharmacopœia, and which will have the merit of being definite, and should become officinal. By their adoption, the medical profession will be spared the humiliation of looking to Messrs. A., B., or C., manufacturing druggists, for therapeutical suggestions. The report referred to is republished in detail in the *Pharmacist* for February, 1874. H.

Law vs. Physic.

A writer in the *Pharmacist*, in the course of a long article, the gist of which seems to be that he has had too much law in his physic, takes occasion to ridicule the act of the legislature, restricting the sale of poisons. The necessity for such a law is thus demonstrated: In the month of April, 1873, a lady of this city applied at three prominent pharmacies for two ounces of laudanum, the sale of which was refused to her on the ground of its dangerous nature. A fourth was found, whose dispenser, less scrupulous, furnished to a lunatic—unknown to him, of course—the means by which she destroyed her own life within a few hours. The self-satisfaction of the first three, upon learning their own escape from implication in such a tragedy, seemed to be ample compensation for the loss of so small a sale.

The law, moreover, is nothing more than an attempt to enforce upon *all* the observance of that degree of caution which has been habitually exercised by our best pharmacists spontaneously for many years.

Further, the same writer remarks: "In reference to Section 2 of the law forbidding the sale of abortifacients, etc., it need only be stated that 'any person' can buy, throughout the State of Illinois, any amount of 'pills, powders, drugs, or combinations of drugs, designed expressly for the use of females,' etc., etc., etc."

Now, to assert, or even to prove, that there are scoundrels here, as elsewhere, who, for filthy lucre, will infringe or evade a law, is certainly a very poor argument against the justice of the law, or the wisdom of its enactment. Moreover, we are scarcely willing to believe that so many of his own profession are so demoralized and debased, as this writer would seem to imply.

The city of Chicago swarms with thieves: are all laws against theft ridiculous therefore? Because murders are repeatedly perpetrated, are all laws for the protection of human life for that reason absurd?

To the strictly conscientious, the comprehensive formula, "Do as you would be done by," anticipates more specific legislation; he will no more sell poison to a possible suicide or murderer, or an abortifacient to a probable criminal, than he will give to a child a razor for a plaything. To him whose rule of life is the statute-law, and whose motto is "Do, lest you be done," specific legislation is essential, and the rigid infliction of its penalties his only comprehensible argument. H.

Mortality Statistics.

Special attention is directed to the Mortality Report at the conclusion of this number. In it we are informed that "the diminution of the mortality is wholly due to the thorough system of vaccination and revaccination employed by the Board of Health, etc., etc. This is undoubtedly true as far as it goes; but the fact is, that the vaccination and revaccination has as much to do with the diminution in the mortality as the excellent quality of Fuseli's colors had to do with the beauty of his painting, for even these would have been inefficient had they not been mixed with "Brains, Sir"! Vaccination and even revaccination without a little administrative ability—brains—in its application, would prove but a very feeble barrier against small-pox, and brains alone will constitute always a strong barrier against any and all epidemics.

We are glad to see the Sanitary Superintendent justifying some of the opinions which we expressed of him at the time of his appointment.

Now let the Council clear out the dead wood amongst his colleagues, and they will learn to their surprise, perhaps, that epidemics, like some other things, can be controlled by those who know how.

H.

Historical Sketch of Rush Medical College, from the Address of PRESIDENT FREER *to the Graduating Class, February* 17, 1874.

At the close of this, the thirty-first annual session of Rush Medical College, in view of the somewhat peculiar relations in which the institution is now placed, it may not be uninteresting to take a brief glance at its history, material for which we gather partly from the introductory lecture to the eleventh session of the College, by our former colleague, the distinguished Dr. Daniel Brainard, and partly from personal recollections.

The first idea of the establishment of a Medical College in Chicago dates as far back as 1836. In the autumn of that year, Dr. Brainard, in connection with the late J. C. Goodhue, of Rockford, in this State, then a resident of this city, drew up the act of incorporation, which was at the ensuing session of the Legislature at Vandalia passed, and approved by the Governor the 2nd of March, 1837. Owing, however, to the financial revulsion that fell with blighting influence upon private and public enterprises alike, some of those who the year before had the means and disposition to aid and handsomely endow the institution, now found themselves without the means of supporting their own families. No action, therefore, took place under the charter before the summer of 1843. Early in the autumn of that year, the Faculty of the College was organized by the appointment of four Professors—Drs. Brainard, Blaney, McLean and Knapp. The session commenced the 4th of December ensuing, and continued sixteen weeks.

This was before the erection of any building, and the lectures were delivered in two small rooms on Clark street. The number of students attendant upon this course was twenty-two; but a single degree was conferred, the first graduate of the institution being William Butterfield, then and now a resident of this city.

During the summer of 1844 the building occupied until the close of the tenth session was erected upon the south-east corner of Dearborn and Indiana streets, upon a lot donated for the purpose by several public-spirited citizens of the "North Side." The cost of this structure was about $3,500, defrayed partly by loan, partly by subscriptions, and the remainder made up by the Faculty.

In 1855 this building was entirely remodeled and enlarged, so as to accommodate about 250 students, at an expense of $15,000, this expense being wholly sustained by the Faculty.

Among the noted men, some deceased and some yet living, connected with the Faculty during this period, may be mentioned Daniel Brainard, William B. Herrick, and Thomas Spencer, deceased; Austin Flint, now of Bellevue Hospital Medical College, New York, and widely known as a medical author; Graham N. Fitch, afterwards U. S. Senator from Indiana; John Evans, late Governor of Colorado and U. S. Senator elect from that incipient State; and Dr. J. V. Z. Blaney, successor to Dr. Brainard as President of the College Faculty, and now Emeritus Professor of Chemistry.

In 1867, the continued and increasing prosperity of the College demanding immediate and large increase of room and general facilities for instruction, an entirely new edifice was erected upon the vacant portion of the College lot, and the old structure was remodeled so as to be merely an appendage. It had two lecture rooms, each with a seating capacity of over 700; spacious laboratory, anatomical rooms, etc., etc., constituting it, probably, the best arranged if not the largest Medical College in this country or any other. The approximate cost of the whole improvement, exclusive of the original lot and building, was about $70,000, and was met solely by the members of the Faculty. The apparatus, museum, cabinets, furniture and fixtures in the building, although very valuable, can scarcely be estimated in money. Whatever the value of the whole, in a single night, the memorable 9th of October, 1871, it disappeared.

Soon after the completion of the new building the institution received a shock by the death of its founder, Dr. Brainard, necessitating the following changes in the Faculty: Dr. J. V. Z. Blaney succeeded to the Presidency; Dr. Moses Gunn, then Professor of Surgery in the Medical department of the University of Michigan, was called to the vacant chair of Surgery; and Dr. Edwin Powell appointed Professor of Military Surgery and Surgical Anatomy. Since that time there have been added the Chair of Clinical Medicine and Diseases of the Chest, and Diseases of the Eye and Ear, filled, the former by Dr. Joseph P. Ross, and the latter by Dr. Edwin L. Holmes. Drs. Henry M. Lyman and James H. Etheridge have been appointed respectively to the Chair of Chemistry and Pharmacy, and Materia Medica and Medical Jurisprudence, made vacant by the resignation of Drs. Blaney and Ingals.

Dr. Walter Hay has been appointed adjunct Professor of Principles and Practice of Medicine, assuming the particular department of Diseases of the Brain and Nervous System; Dr. F. L. Wadsworth, assistant to the Chair of Physiology and Microscopic Anatomy; and Dr. Charles T. Parkes has for several years past discharged the onerous and important duties of Demonstrator of Anatomy to general satisfaction.

Three days after the great fire, by the kindness of the County Commissioners, a large proportion of the class having returned, the lectures were resumed in the amphitheatre of the county hospital, and at the ensuing commencement the degree of M.D. was conferred upon seventy-seven candidates.

From that period to the present, our history is so familiar to you all, that further elaboration is quite unnecessary. Rush Medical College again possesses ample means of illustration, and presents for consideration a united, experienced and harmonious Faculty, almost unequaled clinical advantages, and prestige that throughout the whole country gives character and influence to its alumni. In 1872 the Faculty of the Spring Course of Rush Medical College was reorganized by competitive examinations, or *concourse*, by which means a full corps of competent instructors was selected and assigned to their respective Chairs. This method of *concourse* is new—an innovation—in the management of Medical Colleges in this country, but the executive Faculty of Rush are satisfied, by the results so far attained, that it will be a growing benefit to the institution and its patrons.

Chicago Mortality Report for January, 1874.

CHICAGO, February 17th, 1874.

Editors Chicago Medical Journal:

SIRS—I send you a copy of the Mortality Report of the City of Chicago, for January, with comparisons of some of the principal diseases with the preceding month; also the corresponding month of last year.

I desire to call your attention to the comparison of small-pox of last month, with the corresponding month of last year. The diminution in the mortality is wholly due to the thorough system of vaccination and revaccination employed by the Board of Health, although not put into active operation until about six weeks since. It not only shows the protective power of vaccine (animal virus was used), but also demonstrates fully that vaccination is cheaper than funerals.

Respectfully,

BEN C. MILLER, *San. Supt.*

MORTALITY IN MONTH OF JANUARY, 1874.

Accident, burns	2	Heart, disease of	4
" crushed	3	" organic disease of	2
" drowning	1	" hypertrophy of	2
" by fall	3	" valve disease of	1
" thrown from buggy	1	Hemiplegia	1
" overdose of morphine	2	Hepatitis	2
" " " laudanum	1	Hernia, strangulated	1
" " " narcotic	1	Hydrocephalus	4
" by railroad	3	Inanition	9
" by scalding	1	Intemperance	1
" by suffocation	1	Influenza	2
Abscess, psoas	1	Jaundice	1
Aneurism of aorta	1	Kidneys, Bright's disease of	3
Aphthæ	1	Laryngitis	1
Apoplexy	4	Liver, cirrhosis of	1
Bowels, obstruction of	1	" inflammation of	1
" ulceration of	1	Lungs, congestion of	9
Bladder, " "	1	" paralysis of	2
Brain, congestion of	7	" hemorrhage of	3
" softening of	2	Malformation	1
" inflammation of	9	Metritis	2
Bronchitis	20	Measles	1
" capillary	14	Meningitis	14
Cancer	2	" cerebro spinal	9
" of breast	1	" tubercular	2
" of stomach	3	Metro peritonitis	1
Child-birth	1	Œdema pulmonum	2
Cholera infantum	1	Old age	15
Consumption	53	Ovariotomy	1
Convulsions	86	Paralysis	2
" puerperal	2	Perrotitis	1
Croup	16	Pelvic bone, enlargement of	1
" membranous	1	Pericarditis	1
Colic	1	Peritonitis	6
Cyanosis	2	" puerperal	1
Debility, general	3	Pharyngitis	1
Delirium tremens	1	Pneumonia	60
Diarrhœa, chronic	2	" typhoid	2
Diphtheria	5	Pleurisy	1
Dropsy, general	3	Rheumatism	1
" cardiac	2	Small-Pox	24
" peritoneal	1	Spina bifida	1
Dysentery	1	Suicide, drowning	1
Embolia	1	" laudanum	4
Enteritis	9	" poison	1
Exhaustion	1	" shooting	1
Epilepsy	3	Syncope	1
Erysipelas	3	Tabes Mesenterica	12
Fever, puerperal	7	Teething	6
" remittent	2	Tumor on back	1
" scarlet	5	Ulceration of rectum	1
" malignant	2	Uterus, hemorrhage of	1
" typhoid	13	Vitality deficient	1
Gangrene	3	Whooping cough	5
Gastro Enteritis	1		
Total			553

Premature births, 7; Still births, 70. Total 77

COMPARISON.

Deaths in month of January, 1874	553
" " preceding month in 1873	565
Decrease	12
Deaths in corresponding month in 1873	711
Decrease	158

AGES.

Under one year	209		Forty years to fifty		38
One year to two	45		Fifty " " sixty		26
Two years to three	37		Sixty " " seventy		23
Three " " four	9		Seventy " " eighty		15
Four " " five	7		Eighty " " ninety		4
Five " " ten	19		Ninety " " one hundred		1
Ten " " twenty	12				
Twenty " " thirty	53		Total		553
Thirty " " forty	55				
Colored	5		Males		321
White	548		Females		232
Total	553		Total		553

Married, 162; Single, 391. Total 553

NATIVITIES, JANUARY, 1874.

Austria	1	Holland	3
Belgium	2	Ireland	52
Bohemia	4	Italy	1
Canada	8	Norway	11
Native—Chicago	70	Scotland	2
Foreign, "	224	Sweden	6
United States, other parts	72	Switzerland	4
England	10	Unknown	12
France	2		
Germany	69	Total	553

Deaths daily, 18. Mean temperature, 29°. Rain fall, 4.47 inches.

MORTALITY BY WARDS, ETC., JANUARY, 1874.

Wards.	No. Deaths.	Pop. in 1872.	Percentage. one death in
1	1	398	----
2	4	2,174	----
3	15	19,157	1,277
4	12	16,832	1,403
5	19	18,564	977
6	51	31,371	627
7	41	27,644	674
8	30	30,253	1,008
9	38	30,032	790
10	16	16,624	1,039
11	18	18,340	1,019
12	16	20 876	1,304
13	19	14,636	770
14	16	15,892	931
15	87	40,047	460
16	34	19,099	561
17	35	17,513	500
18	29	19,977	689
19	2	2,944	----
20	11	5,023	----
	494		

Ratio of deaths to population in 1872, one death in 664.

No. deaths brought forward	494	St. Luke's Hospital	2
Accidents	19	Protestant Orphan Asylum	2
Bridewell	1	Small-Pox Hospital	4
County Hospital	10	St. Joseph's "	1
Foundlings' Home	3	Suicides	7
Half Orphan Asylum	1	Mercy Hospital	5
Home for Friendless	2		
Hospital, Alexian Bros.	2	Total	553

CASES OF SMALL-POX REPORTED DURING JANUARY, 1874.

Ward.	No. Cases.	Ward.	No. Cases.	Ward.	No. Cases.
1	1	8	--	15	18
2	1	9	1	16	8
3	3	10	2	17	7
4	1	11	2	18	8
5	1	12	--	19	1
6	12	13	2	20	--
7	9	14	--	Recently arrived,	2

Total 79

Cases during January, 1874 79
" " December, 1873 122
Decrease 43

Cases during January, 1873 270
Decrease 191

Compared with the preceding month there were—

3	less	deaths	by Accidents.	2	less	deaths	by Paralysis.
9	"	"	" Apoplexy.	3	"	"	" Rheumatism.
2	"	"	" Cancer.	12	"	"	" Small-Pox.
5	"	"	" Consumption.	4	"	"	" Tabes mesenterica.
6	"	"	" Debility, general.	5	more	"	" Brain disease.
3	"	"	" Diarrhœa.	9	"	"	" Bronchitis.
16	"	"	" Enteritis.	11	"	"	" Convulsions.
3	"	"	" Epilepsy.	8	"	"	" Croup.
2	"	"	" Fever, remittent.	4	"	"	" Lung disease.
4	"	"	" " typhoid.	8	"	"	" Meningitis.
6	"	"	" Heart disease.	2	"	"	" Old age.
2	"	"	" Hydrocephalus.	22	"	"	" Pneumonia.
3	"	"	" Inanition.	3	"	"	" Suicide.

Compared with the corresponding month of last year, there were—

15	more	deaths	by Accidents.	3	less	deaths	by Delirium tremens.
5	"	"	" Bronchitis.	9	"	"	" Diphtheria.
3	"	"	" Consumption.	2	"	"	" Dropsy.
8	"	"	" Meningitis.	7	"	"	" Enteritis.
1	"	"	" Œdema pulmonum	10	"	"	" Erysipelas.
1	"	"	" Paralysis.	13	"	"	" Pericarditis.
1	"	"	" Teething.	5	"	"	" Pneumonia.
3	less	"	" Apoplexy.	2	"	"	" Pleurisy.
8	"	"	" Consumption.	40	"	"	" Small-Pox.
2	"	"	" Croup.	1	"	"	" Tabes mesenterica.